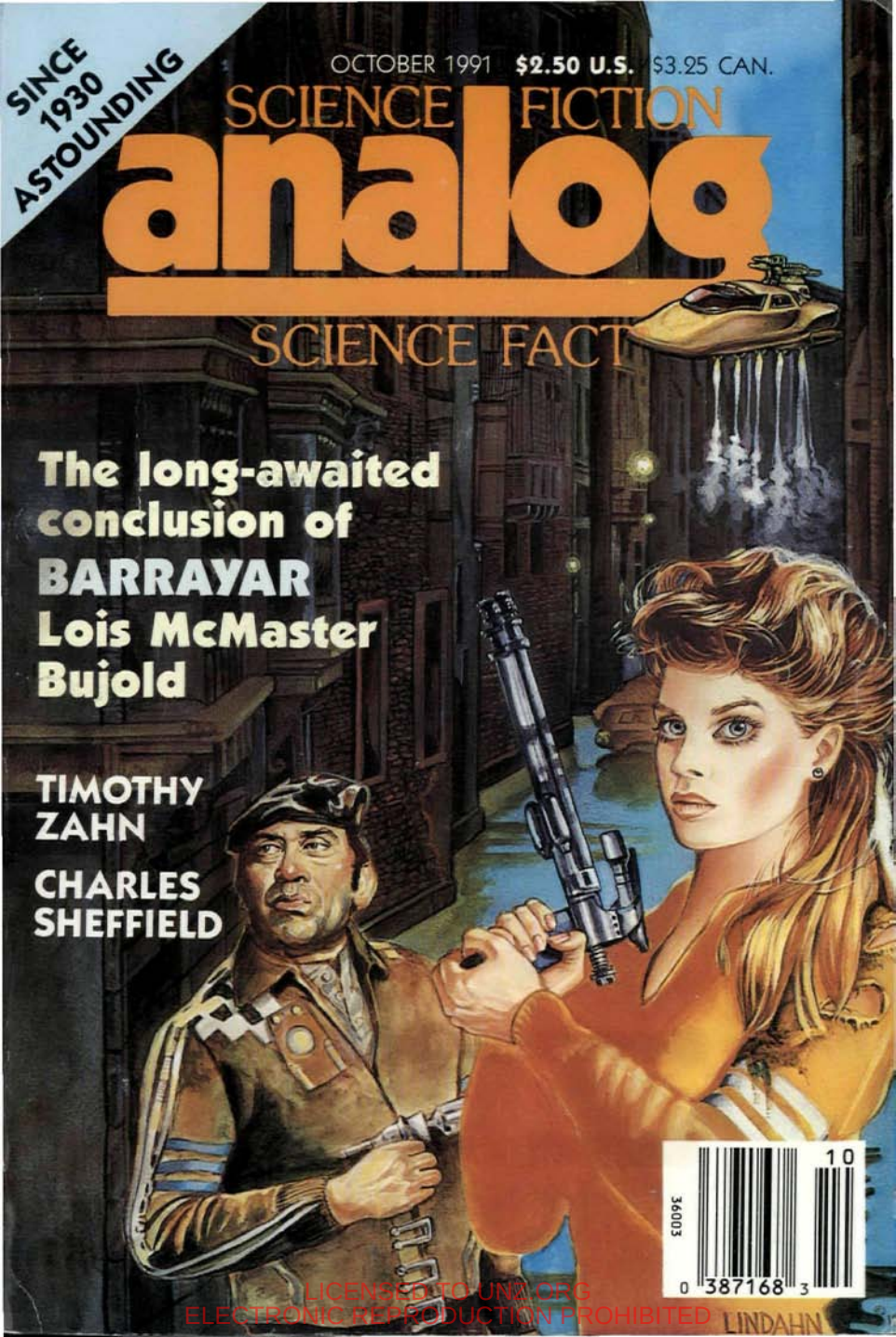
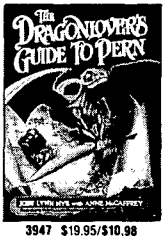


LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

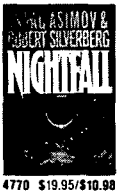
THE Science Fiction BOOK CLUB®

Any way you look at it, no one delivers great science fiction any better.

4796 $24.95/$12.98



3947 $19.95/$10.98



4770 $19.95/$10.98

5785 $22.95/$11.98

0786+ $7.98x

7625++ $15.00/$6.98

7260 *Woundhealer's Story, Sightblinder's Story, Stonecutter's Story*
$45.85●/$8.98

5017 *Farslayer's Story, Coinspinner's Story, Mindsword's Story*
$50.85●/$13.98

5108 *To Ride Pegasus, Pegasus in Flight*
$39.90●/$12.98

4747 *So You Want To Be a Wizard, Deep Wizardry, High Wizardry*
$45.85●/$12.98

0174* *Magic's Pawn, Magic's Promise, Magic's Price*
$14.98x

7609* *The Book of the Damned, The Book of the Beast*
$39.90●/$10.98

HERE'S WHAT YOU GET WHEN YOUR MEMBERSHIP'S ACCEPTED...

A GUARANTEE OF SATISFACTION. If you're not 100% satisfied with your books, return them within 10 days *at our expense* and owe nothing.

HUGE DISCOUNTS ON HARDCOVER BOOKS. Save as much as 65% off publishers' edition prices. Club books are sometimes altered in size to fit special presses.

THE FREE CLUB MAGAZINE. You'll receive up to 16 issues a year. Each issue reviews the Featured Book Selection(s) plus a wide variety of alternate books from the Club's *extensive library.*

SHOPPING MADE SIMPLE. To get the Featured Book Selection(s), *do nothing*—it will be sent automatically. If you prefer another book—or none at all—simply return your Member Reply Form by the specified date. A shipping and handling charge is added to each order.

AN EASY-TO-MEET OBLIGATION. Take up to 2 years to buy 4 more books at regular low Club prices. Afterwards, you may resign membership anytime.

RISK-FREE RETURN PRIVILEGES. If you get an unwanted book because your Club magazine was delayed and you had less than 10 days to respond, simply return the book *at our expense.*

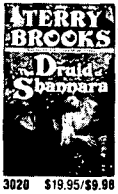
Prices in fine print are publishers' hardcover editions.
Prices in bold print are Club hardcover editions.

● Combined publishers' editions * Explicit scenes and/or language
x Hardcover edition exclusively for Club members

+ Copyright © 1991 Paramount Pictures. All Rights Reserved.
STAR TREK and Related Marks are Trademarks of Paramount Pictures.

++ TM and © 1991 Lucasfilm Ltd. All Rights Reserved.
Used Under Authorization.

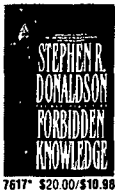
LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



3020 $19.95/$9.98

4846 $19.95/$9.98

4820 $18.95/$8.98

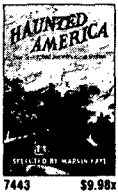


7617* $20.00/$10.98

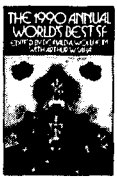
4598* $15.95/$7.98

5256 $19.95/$6.98

5033 $6.98x



7443 $9.98x



6684 $5.98x

3046 $21.95/$8.98

4994 $7.98x

5074 $6.98x

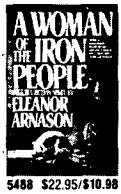
5470 $15.95/$7.98

0752 *Elric of Melnibone, The Sailor on the Seas of Fate, The Weird of the White Wolf*
$8.98x

1172 *The Vanishing Tower, The Bane of the Black Sword, Stormbringer*
$10.98x

5199 Nonfiction
$19.95/$8.98

5298 $7.98x



5488 $22.95/$10.98

TAKE ANY 5 BOOKS FOR $1 with membership

THE Science Fiction BOOK CLUB®

MAIL TO: *The Science Fiction Book Club*
6550 East 30th Street, P.O. Box 6367
Indianapolis, IN 46206-6367

Please write book numbers here:

YES! Please enroll me in *The Science Fiction Book Club* according to the risk-free membership plan described in this ad. Send me the 5 BOOKS I've indicated. Bill me just $1, plus shipping and handling.

SAVE MORE—BUY YOUR FIRST BOOK NOW FOR $2.98
☐ Send me the book I've indicated and reduce my commitment to only 3 more books. Bill me just $2.98, plus shipping and handling.

(write book number)

27521 33

Mr./Mrs.
Miss/Ms. _____
please print

Address _____ Apt. _____

City _____ State _____ Zip _____

27522 31

If you're under 18, your parent must sign here _____

Members accepted in U.S.A. and Canada only. Canadian members serviced from Canada, where offer is slightly different. Sales tax added where applicable. We reserve the right to reject any application. ANA 10/91

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

analog

Vol. CXI No. 12
October 1991

Next issue on sale
September 17, 1991

Serial

BARRAYAR, (Conclusion), Lois McMaster Bujold ____ 10

Novella

GUILT BY ASSOCIATION, Timothy Zahn ____ 120

Science Fact

THE MOTE IN NASA'S EYE, Charles Sheffield ____ 78

Short Stories

RED ALERT, Jerry Oltion ____ 91
BARELY DECENT, Kent Patterson ____ 100

Reader's Departments

THE EDITOR'S PAGE ____ 4
IN TIMES TO COME ____ 112
THE ALTERNATE VIEW, John G. Cramer ____ 114
THE REFERENCE LIBRARY, Tom Easton ____ 161
BRASS TACKS ____ 169
THE ANALOG CALENDAR OF UPCOMING EVENTS ____ 176

Cover by Ron and Val Lakey Lindhan

Joel Davis
President

A. Bruce Chatterton
Publisher

Stanley Schmidt
Editor

Tina Lee
Managing Editor

Terri Czeczko
Art Director

Indicia on Page 6

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Michael A. Stackpole

A GATHERING EVIL™

Tycho Caine woke up in a body bag
in an organ salvage clinic...
Things went downhill from there!

The First DARK CONSPIRACY™ Novel

GDW, PO Box 1646, Bloomington, IL 61702-1646
Phone 1-800-383-3512

GDW

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Editorial

EXPERIENCE REQUIRED

Stanley Schmidt

I'm not sure when or where I saw the cartoon, except that it was on a recent editorial page of my local newspaper. So I can't quote it to you exactly, or credit the cartoonist by name. What I can do is give you the gist of it, and I think you'll appreciate the point it made.

The first of its four panels, as I recall, showed one character representing the federal government telling another, "Our expenses are bigger than our income. What can we do?"

"No problem," says his colleague. "We'll increase what we take from the states and decrease what we give back to them."

The second panel showed one character representing a state government telling another, "Our expenses are bigger than our income. What can we do?"

"No problem," says his colleague. "We'll increase what we take from the towns and counties and decrease what we give back to them."

The third panel showed one character representing a local government telling another, "Our expenses are bigger than our income. What can we do?"

"No problem," says his colleague. "We'll simply increase the tax rates we charge our citizens."

The fourth and last panel showed a taxpayer standing alone and forlorn, with his empty pockets turned inside out, saying, "Tell me about it!"

Meanwhile, an article in the same paper, close to the same time, described the ongoing efforts of legislators to trim a state budget—while keeping for their own members such perks as multiple luxury cars and luxurious residences "rented" from the state at rates ridiculously lower than the expense of main-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

taining them.

It's almost enough to make mere mortals want to drop whatever they're doing and go into politics. Governments, after all, have an enormous advantage over everybody else; and the bigger they are, the more pronounced that advantage is. When a government decides it needs more money, all it has to do is announce that it's going to take a bigger percentage of the income of somebody else with less clout—and then take it, by force or at least the implied threat of force.

The individual taxpayer has no such recourse. If his or her expenses are getting beyond his means and he is conscientious enough to be unwilling to sink into debt or go on welfare, he has two choices. He can increase his income, by doing or making something that people are willing to pay more for. Or he can find ways to live more frugally, like doing without some things he might like to have, shopping more carefully, and taking care of things so they'll last longer.

Governments are the *only* entities which can demand more money *whether or not* the donors are willing to pay it, or believe that they're getting their money's worth. Furthermore, governments gloss over the exceedingly important distinction between an increase in an absolute quantity of money and an increase in a *percentage* of an absolute quantity. *Of course* governments need more money to get by each year. We all do, because inflation we have always with us, to greater or lesser extents. But for most of us, in more or less "normal" times, that increase in need is at least approximately offset by increases in income. Sure, I pay far more for things now than I did 20 years ago; I also earn far more than I did then. The same is probably true for you.

Yes, I know there are exceptions. I've been one of them; I've had spells when my income was not increasing nearly as fast as general inflation, so that for a while my real purchasing power was declining. Over the long term, though, and over the population as a whole, both income and expenditures tend to rise. Since most taxes are based one way or another on percentages of what people earn or spend, this means that governments *automatically* get more tax revenues—by amounts roughly commensurate with their increased costs—*without* changing the tax rates expressed as percentages.

When they increase the percentage rates, this gives them a double whammy: they take an increased percentage of an increased amount! And since ultimately that extra increase can come only from the taxpayer's pocket, it tends to offset the increase which allowed him to compensate for inflation. The result is that the individual taxpayer, more than anyone else, finds it harder than he should to keep up with inflation—and the peculiar way taxes are increased is directly responsible.

Say inflation is 5%. If you get a 5% raise *and keep the same fraction of it you always did*, you're effectively back where you started. You haven't made any real gain, but neither have you lost any ground.

Now suppose that before the inflation

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

and raise you were paying 20% of your income in taxes. If that rate doesn't change, the government gets the customary 20% of your increased income. Both you and the government still break even; you both still have approximately the same purchasing power you did last year.

But if the government increases your tax *rate* from 20 to 21%, that means that an additional 1% of your total, increased income now goes to the government. Now your real, spendable income has increased by *less* than the cost of living, while the government's has increased by *more*. You have most assuredly lost ground, while the government has gained substantially more than it should have needed to keep up with inflation in the same way that you're expected to.

So *you* have to find ways to live more frugally (or to make people *want* to pay you more), while governments seem (despite periodic bursts of lip service to the idea) chronically unwilling or unable to do either. (I respectfully submit

STANLEY SCHMIDT ..... Editor
TINA LEE ..... Managing Editor
IAN RANDAL STROCK ..... Assistant Editor
SCOTT L. TOWNER ..... Editorial Assistant
A. BRUCE CHATTERTON ..... Publisher
TERRI CZECZKO ..... Art Director
ANTHONY BARI ..... Junior Designer
CAROLE DIXON ..... Production Director
CYNTHIA MANSON ..... Director of Marketing and Subsidiary Rights
CONSTANCE SCARBOROUGH . Contracts Manager
VEENA RAGHAVAN ..... Director, Special Projects
CHRISTIAN DORBANDT ..... Newsstand Marketing and Promotion Manager
DENNIS JONES ..... Newsstand Operations Manager
ELIZABETH BEATTY ..... Circulation Director
PHYLLIS JESSEN ..... Circulation Planning Director
JUDY DORMAN ..... Advertising Coordinator
IRENE BOZOKI ..... Classified Advertising Director
BARBARA ZINKHEN ...Classified Advertising Manager

Published since 1930.

JOEL DAVIS
President

CARL BARTEE
Vice President
Manufacturing

JOE De FALCO
Vice President
Finance

MARY TZIMOKAS
Vice President
Circulation

First issue of *Astounding* January 1930. ®

MPA

ADVERTISING OFFICES
NEW YORK
(212) 557-9100

Analog Science Fiction·Science Fact (Astounding) is published every 28 days which includes special issues in January and July by Davis Publications, Inc. at $2.50 a copy in U.S.A., $3.25 in Canada. 1 year subscription for $34.95 in the U.S.A. and possessions, in all other countries, $40.50 (GST included in Canada, GST #R123293198) payable in advance in U.S. funds. First copy of new subscription will be mailed within eight weeks of receipt of order. When reporting change of address allow 6 to 8 weeks and give new address as well as the old address as it appears on the last label. Second-class postage paid at New York, NY, and at additional mailing office. Canadian 3rd class postage paid at Windsor, Ontario

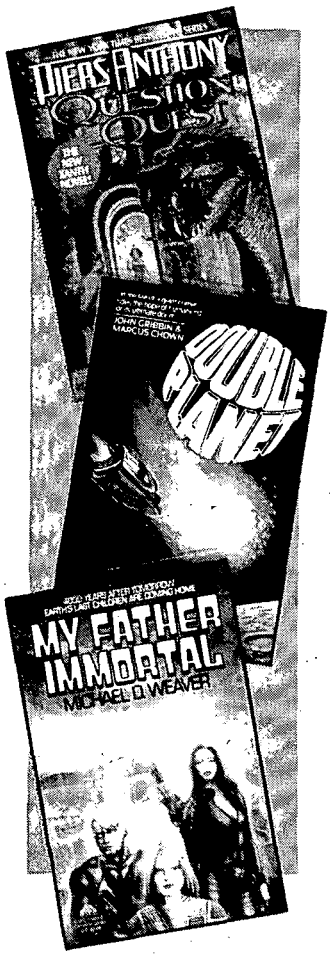
® 1991 by Davis Publications, Inc., all rights reserved. Protection secured under the Universal Copyright Convention. Reproduction or use of editorial or pictorial content in any manner without express permission is prohibited. All stories in this magazine are fiction. No actual persons are designated by name or character. Any similarity is coincidental. Printed in U.S.A. All submissions must be accompanied by stamped self-addressed envelope, the publisher assumes no responsibility for unsolicited manuscripts or artwork.

POSTMASTER: SEND to ANALOG SCIENCE FICTION/SCIENCE FACT (ASTOUNDING) P.O. BOX 7061, Red Oak, IA 51591.
IN CANADA RETURN TO 1801 SOUTH CAMERON, WINDSOR, ONT. CANADA N9B 3E1
Editorial and Advertising: Analog Science Fiction/Science Fact, 380 Lexington Avenue, New York, NY 10168-0035
Subscriptions: Analog Science Fiction Science Fact, P.O. Box 7061, Red Oak, IA 51591 ISSN 0161-2328

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

AVON BOOKS

THE FINEST IN SCIENCE FICTION AND FANTASY



QUESTION QUEST
Piers Anthony

A Thrilling New XANTH Adventure—from Piers Anthony, bestselling author of over 40 fantasy and science fiction novels.

The 14th installment in the on-going, *The New York Times* bestselling humor- and pun-filled series.

DOUBLE PLANET
John Gribbin and Marcus Chown

John Gribbin is a world-famous science popularizer, the author of twenty-six acclaimed works of nonfiction. Marcus Chown is a former Cal Tech Radio Astronomer and staff writer for *New Scientist.* Together they have created a remarkable novel of an astonishing, terrifying...and plausible future.

"A smash!" —**David Brin, author of *Startide Rising***

MY FATHER IMMORTAL
Michael D. Weaver

"A marvel of ideas." —***OtherRealms***

"Weaver's energy is more focused than ever. He writes of a mother's love...the humanity which can lie under a grotesque exterior. Small miracles which struggle into being from the human spirit.... Fired with the strongest of human emotions." —***Locus***

Coming in October 1991

AVONOVA

AVON BOOKS
The Hearst Corporation

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

that allowing legislatures to keep fancy cars and houses at taxpayer expense does *not* bespeak serious frugality.)

I suggest that the problem is twofold:

(1) Governments have little incentive to spend frugally, or to provide services that people value so highly they *want* them even if they cost more, simply because they can get away with not doing so. They have the power and immunity to take pretty much what they want, and they don't have to deal with competition for the services they provide.

(2) They may literally *not know how* to do more with less, because they've never had to learn. This may seem a flippant suggestion, but I offer it quite seriously. Again, I acknowledge that there are individual exceptions; but quite often legislators come from well-to-do families and therefore have stood, so to speak, on the shoulders of financial giants. The skills required to live on an inherited fortune are not at all the same as those required to live on an income barely adequate for subsistence.

Changing any of this, of course, would require changing laws. The biggest problem in that is that laws are made by legislators, and it would hardly be surprising for them to prefer things as they are. Nevertheless, just for fun, what changes might be desirable if we could figure out how to make them happen? What might we do differently if we were designing a system from scratch?

I don't plan to say much about Problem *(1)*. Figuring out how to make legislators more accountable (elections help, but not enough) is just a bit more than I feel ready to tackle this morning. The same goes for trying to provide competition, or some other incentive, so that governments have to think harder about the *quality* of the services they provide for the money they collect. (The same legislature that was keeping its luxury cars and houses proposed deep slashes in funding for frills like education and road maintenance!)

However, I do have a simple, concrete change to propose for Problem *(2)*. I have suggested that the problem is that many legislators lack experience in making good use of limited funds. Therefore, let us require them to have some of that experience, as one of the qualifications for the job. Let's require our lawmakers to have spent a certain number of years living in something at least approximating poverty, without going on welfare or getting in trouble with the law! That, I suggest, would constitute good evidence of ability to use limited resources wisely.

The requirement might be waived, of course, for somebody who started out in poverty and managed to rise above it, through his own efforts and without illegal activities, in less than the stipulated time. That would be evidence of another talent that governments urgently need: the ability to improve one's own income without recourse to forcibly taking it from others less powerful.

What we *don't* need more of is politicians who have never had to learn to get the most out of limited funds, but are all too adept at simply dipping deeper into the pocket of someone else unable to resist. ■

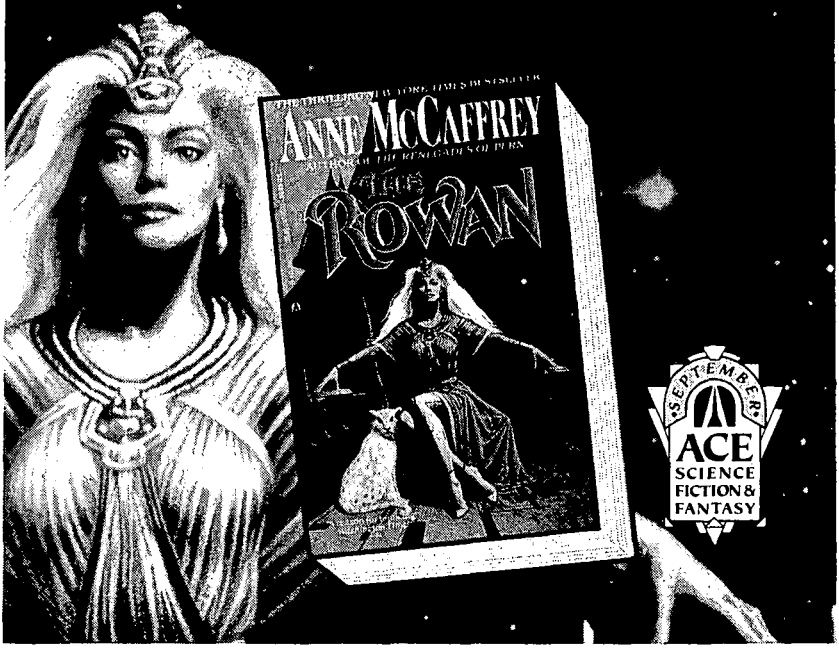
LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

THE NEW YORK TIMES BESTSELLER!

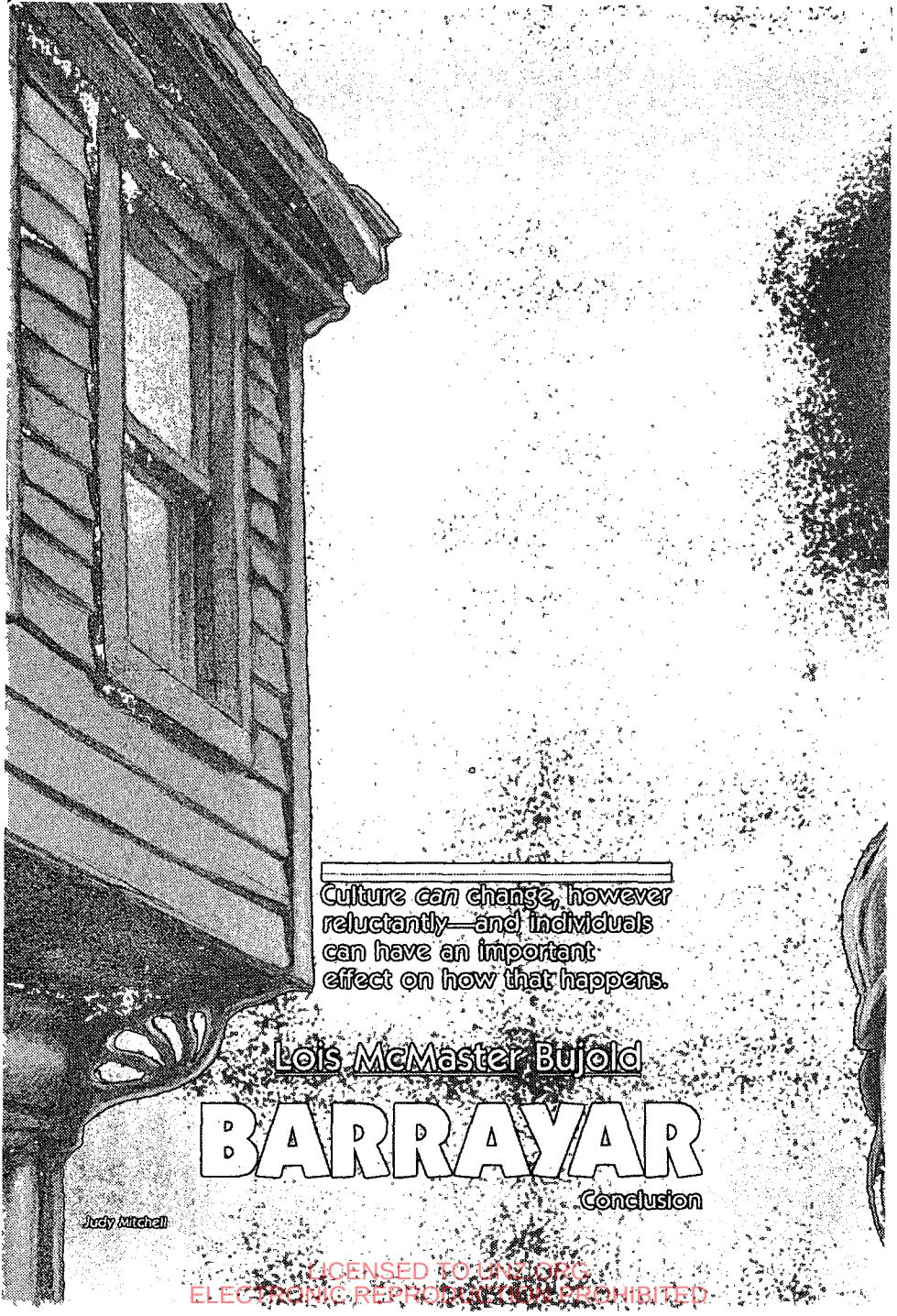
"One of the best McCaffrey novels to come along in years!" —*Locus*

ANNE McCAFFREY
THE ROWAN

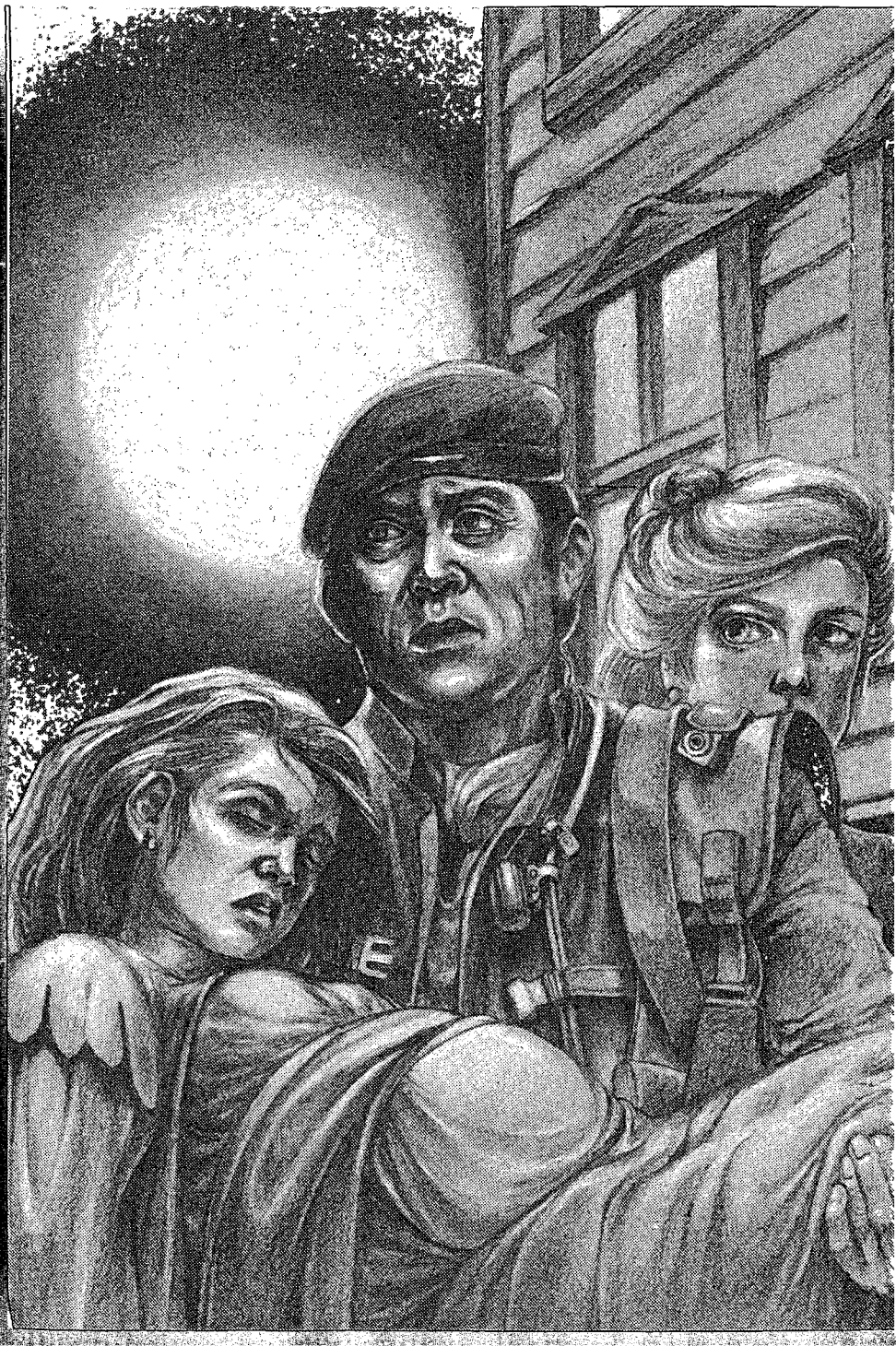
A mudslide on the planet Altair completely destroys the Rowan Mining Camp. A three-year-old child is rescued and named The Rowan, and she becomes one of the most powerful Talents in the galaxy. And when Jeff Raven touches her mind with an urgent plea for help, a bond is forged that will change them both—forever. $4.95



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED


Culture *can* change, however reluctantly—and individuals can have an important effect on how that happens.
Lois McMaster Bujold
BARRAYAR
Conclusion
Judy Mitchell

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

SYNOPSIS

I am afraid, thinks **Cordelia.** *The new Lady Vorkosigan of the planet Barrayar, formerly Captain Cordelia Naismith of the Betan Astronomical Survey, has reason to be uneasy. She left her homeworld of Beta Colony, after its recent war with Barrayar, to marry* **Admiral Lord Aral Vorkosigan.** *Aral had resigned his commission, disgusted by the secret and lethal politics behind the war. But he has been hooked out of retirement by the dying* **Emperor Ezar** *and appointed Regent to the four-year-old heir* **Prince Gregor** *and his mother,* **Princess Kareen.** *Aral takes up his new duties, determined to serve honorably.*

Included in Aral's household are two former soldiers, **Lieutenant Koudelka,** *crippled by nerve disruptor fire and now serving as personal secretary to the new Lord Regent, and the strange* **Sergeant Bothari,** *victim of a draconian memory wipe for his crimes during the war, and of dubious mental balance.*

Aral and Cordelia visit Princess Kareen and Gregor. Kareen sends Cordelia a gift—her female bodyguard, the tall blonde **Droushnakovi,** *who is fascinated by Cordelia's history as a female soldier. Cordelia, newly pregnant and worried about Barrayar's primitive standards of medicine, welcomes her company. They go shopping and Cordelia buys a swordstick, which she presents to Koudelka, who is touchy about his handicaps: mutation-scarred Barrayar is brutal to the physically imperfect.*

Aral's father, the aged **General Count Piotr Vorkosigan,** *arrives from the country to attend the ceremonies heralding the new regency. Escorted to the visitor's gallery by Aral's cousin* **Captain Lord Padma Vorpatril,** *Cordelia watches the Joint Council Vote to confirm Aral's appointment. There she meets two young Vor lords,* **Evon** *and* **Carl Vorhalas;** *their acquaintance begins badly when Carl denigrates the crippled Koudelka, but they repair the breach.*

Ezar dies, and Gregor becomes Emperor. Cordelia meets Padma's wife **Alys Vorpatril,** *also pregnant, and tries to blend into Barrayaran Vor society. Droushnakovi falls in love with Koudelka, but Kou, jealous of her physical abilities, so like those he has lost, and secretly worried about impotence from his injuries, rebuffs her.*

Aral survives an assassination attempt when a sonic grenade narrowly misses his groundcar. The assassin escapes unidentified. Cordelia's fear and sense of isolation grow.

At the Emperor's birthday dinner at the Imperial Residence, a highly ceremonial function, Cordelia has a strange encounter with **Count Vidal Vordarian,** *who reveals what he clearly imagines is damaging information about Aral's sexual past. Since Cordelia knows it already, she is baffled by Vordarian's venom, till she realizes it is an oblique attack on Aral through her. Count Vordarian is also trying to court Princess Kareen. Disturbed, Cordelia privately asks Aral's personal security commander,* **Simon Illyan,** *to take a closer look at Vordarian.*

A dilemma then lands on Aral. Carl Vorhalas gets into a drunken fight at a party that turns into an illegal duel, and unfortunately kills his opponent. Dueling had been ruthlessly stamped out in Aral's youth, and Carl's mandatory

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

punishment is beheading. Carl's father, Aral's political crony **Count Vorhalas,** *asks Aral to commute the sentence. Aral, after agonized soul-searching, declines, and Carl is executed.*

That night, Carl's brother Evon fires a soltoxin gas grenade through Aral and Cordelia's bedroom window in an attempt at revenge. Thanks to Aral's quick reflexes they survive, but the poison and even more, its antidote, are violent teratogens, destroying the bones in their unborn child. At the hospital Cordelia encounters **Captain Vaagen,** *a military researcher, who has ideas for treatment—if the fetus can be transferred to a uterine replicator. This operation would be routine on Beta Colony, but is unknown on Barrayar. Despite opposition from both her physician and Count Piotr, who sees the damaged infant as an abhorred "mutation," Cordelia gets Aral's backing and the operation is attempted. Cordelia almost dies, but the fetus is successfully transferred into the artificial womb.*

Cordelia and Aral go to the country estate of Vorkosigan Surleau to recover. Drou then brings a personal problem to Cordelia; just before the soltoxin attack, Drou and Koudelka had made love, and she now fears she may be pregnant. A quick check with Cordelia's medical supplies reveals she's not, but this news does not cure her depression; Kou has been avoiding her. The reason emerges when Kou turns up, and accuses himself of rape. Finding himself functional for the first time in a year, he had panicked and taken her. Drou is incensed, realizing now that Kou was so intent upon himself that night he hardly saw her at all. Kou is embarrassed in turn by her demonstration that he would have been physically incapable of overpowering her, and fears that he was a victim of mere charity. They part, both furious.

Count Piotr returns from the capital, foiled in a secret attempt to have the fetus killed, and a far more serious argument begins between Piotr and Aral. Piotr denies the child his traditional name. Cordelia says to name him Miles, after her father, instead.

The agonizing clash is interrupted when a smoking lightflyer lands on the lawn, and the mortally wounded ImpSec **Chief Negri** *falls out. His passenger is the weeping and terrified five-year-old Emperor Gregor, wearing one shoe. Vidal Vordarian has attempted a coup in the capital, capturing Princess Kareen. His forces are now in murderous pursuit of Gregor.*

Aral and Piotr respond instantly, dividing the available forces. Aral takes most of the men and heads for the Imperial garrison town of Hassadar, and Piotr takes Gregor, Cordelia, Sergeant Bothari and another liveried man, and escapes into the Dendarii Mountains on horseback, where Piotr had once fought a successful guerrilla war against the Cetagandan invaders. Helped by one of Piotr's old soldiers, they hide high in the mountains. Cordelia decoys Vordarian's troops into a huge cavern system formerly used by the guerrillas, which swallows hundreds of searchers, then escapes with Gregor. Gregor is hidden elsewhere, and Cordelia is taken to Aral's field headquarters to the south, Tanery Base Shuttleport.

Aral is slowly regaining control of the military forces and the loyalties of

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the provinces. Simon Illyan arrives, having escaped from the seized capital with the important staffer **Admiral Kanzian.** *In a peculiar propaganda broadcast from the capital, Vordarian, who asserts that Gregor was killed by Vorkosigan, has himself appointed Regent for Princess Kareen and announces their engagement. Kareen displays no emotion at all, and Vorkosigan can't tell if she's duped or drugged or cooperating.*

Then Captain Vaagen turns up, injured and raving. Vordarian's goons have looted Miles's uterine replicator from Vaagen's classified laboratory at the Imperial Military Hospital, trashed the lab, destroyed Vaagen's careful notes and records, and beaten his colleague Dr. Henri to death. They then let Vaagen go, to take the word to Aral and Cordelia that Vordarian has a new hostage.

Cordelia asks Aral for a commando raid to rescue Miles. Reluctantly, he refuses. Many family members of his staffers are being held, and he could lose their loyalties by diverting needed forces for his personal benefit. Further, he is in the middle of delicate negotiations with certain members of Vordarian's staff to sell out, which if successful could put Vorkosigan's forces in better position for a major rescue raid. But tiny Miles has a time limit the other hostages do not share; if his replicator is not serviced in less than six days, he will die. Cordelia withdraws her plea, but not her resolve, particularly when Piotr expresses satisfaction that Vordarian will now do the job that Cordelia and Aral would not—destroy the "mutant."

Then Droushnakovi confides to Cordelia that in her three years of working in security at the Imperial Residence, she learned several secret routes in and out, it is at least possible that, if they could get to the capital, Drou could get them into the Residence. Knowledge alone is not enough, Cordelia decides. They need muscle. She approaches Sergeant Bothari, whose own infant daughter is also a hostage, for help. Bothari, fixated upon Cordelia as his hope of redemption, promises her his absolute loyalty. Their secret escape from Tanery Base is almost ruined by Lieutenant Koudelka, who surprises them en route; Bothari grabs him and they take him, and his swordstick, along.

CONCLUSION

CHAPTER SIXTEEN

Illegal vegetables. Cordelia sat in bemused contemplation between sacks of cauliflower and boxes of cultivated brillberries as the creaking hovertruck coughed along. Southern vegetables, that flowed toward Vorbarr Sultana on a covert route just like hers. She was half-certain that under that pile were a few sacks of the same green cabbages she'd traveled with two or three weeks ago, migrating according to the strange economic pressures of the war.

The districts controlled by Vordarian were now under strict interdiction by the districts loyal to Vorkosigan. Though starvation was still a long way off, food prices in the capital of Vorbarr Sultana had skyrocketed, in the face of hoarding and the coming winter. So poor men were inspired to take chances. And a poor man, already taking a chance, was

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

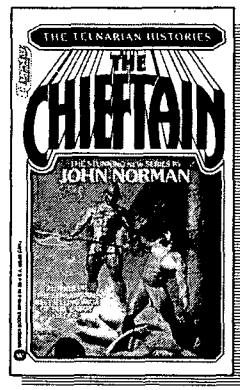
N E W S F R O M

Questar
SCIENCE FICTION FANTASY

IN A SAVAGE EMPIRE, A WARRIOR MAKES A TERRIFYING BID FOR FREEDOM!

The author of the five-million-copy bestselling GOR series delivers the first book in his long-awaited new science fiction series, THE TELNARIAN HISTORIES!

A corrupt, vast empire spans galaxies, ruling by terror, slavery, and the lash, where men are used as cruel entertainment for the amusement of others. In the arena, before the horrified gaze of noble ladies, the warrior named Dog slaughters headsmen, hunters, and beasts to win freedom as a gladiator. Then deep-space rebels attack an Empire ship, where Dog slays for passengers' amusement, and the gladiator becomes a rebel. Now a beautiful officer of the court finds her life depends on the mercy of Dog—the man she ordered put to death!



Cover art by Dorian Vallejo
0-446-36149-6/$4.50
(In Canada: $5.99)

A WORD FROM BRIAN THOMSEN

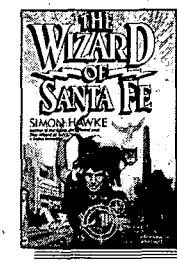
John Norman is known and revered as the creator of the bestselling Gor series, first published by Ballantine and then by DAW. It was a marvelous combination of Burroughsian space opera and social anthropology of a controversial nature.

I have always been a fan of the John Carter and Pellucidar series and consider Norman to be the best latter-day practitioner of this SF subgenre. His latest work starts a bold new series of the Telnarian histories, detailing the decline and fall of an intergalactic empire not unlike Earth's ancient Rome and is sure to garner him even more fans as he tells his tales of ancient history in the spaceways.

...and when you see me around, ask me about some more recent history and brave new talents.

ALSO THIS MONTH:

THE WIZARD OF SANTA FE



Join bestselling author Simon Hawke on a new wild *Wizard* adventure—as ancient evil stalks New Mexico!

Magic has returned to the city of Santa Fe, and adept Paul Ramirez hopes to pass on the knowledge he has gained from the legendary Merlin Ambrosius. But an evil force threatens this peaceful city, and Paul must try to stop it—with help from a beautiful burglar, a dropout warlock, and a tough-talking one-eyed cat named Gomez.

Cover art by David Mattingly
0-446-36194-1/$4.50
(In Canada: $5.99)

Also read:
The Samurai Wizard
0-446-36132-1/$4.50
(In Canada: $5.95)
The Wizard of Rue Morgue
0-445-20740-3/$4.50
(In Canada: $5.95)
The Wizard of Sunset Strip
0-445-20702-7/$3.95
(In Canada: $4.95)
The Wizard of Whitechapel
0-445-20304-8/$4.50
(In Canada: $5.95)

© 1989 Warner Books, Inc. Printed in USA. Questar is a registered trademark of Warner Books, Inc.

AVAILABLE AT BOOKSTORES EVERYWHERE WARNER BOOKS

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

not averse to adding a few unlisted passengers to his load, for a bribe.

It was Koudelka who'd generated the scheme, abandoning his urgent disapproval, drawn in to their strategizing almost despite himself. It was Koudelka who'd found the wholesale produce warehouses in the town in Vorinnis's District, and cruised the loading docks for independents striking out with their loads. Though it was Bothari who'd ruled the size of the bribe, pitifully small to Cordelia's mind, but just right for the parts they now played of desperate countryfolk.

"My father was a grocer," Koudelka had explained stiffly, when selling his scheme to them. "I know what I'm doing."

Cordelia had puzzled for a moment what his wary glance at Droushnakovi meant, till she recalled Drou's father was a soldier. Kou had talked of his sister and widowed mother, but it was not till that moment that Cordelia realized Kou had edited his father from his reminiscences out of social embarrassment, not any lack of love between them. Koudelka had vetoed the choice of a meat truck for transport: "It's more likely to be stopped by Vordarian's guards," he'd explained, "so they can shake down the driver for steaks." Cordelia wasn't sure if he was speaking from military or food service experience, or both. In any case, she was grateful not to ride with grisly refrigerated carcasses.

They dressed for their parts as best they could manage, pooling the satchel and the clothes they stood in. Bothari and Koudelka played two recently-discharged vets, looking to better their sorry lot, and Cordelia and Drou two countrywomen co-scheming with them. The women were decked in a realistically odd combination of worn mountain dress and upper-class cast-offs apparently acquired from some second-hand stop. They managed the right touch of mis-fittedness, of women not wearing originals, by trading garments.

Cordelia's eyes closed in exhaustion, though sleep was far from her. Time ticked in her brain. It had taken them two days, to get this far. So close to their goal, so far from success. . . . Her eyes snapped open again when the truck halted and thumped to the ground.

Bothari eased through the opening to the driver's compartment. "We get out here," he called softly. They all filed through, dropping to the city curb. Their breath smoked in the chill. It was pre-dawn dark, with fewer lights about than Cordelia thought there ought to be. Bothari waved the transport on.

"Didn't think we should ride all the way in to the Central Market," Bothari grunted. "Driver says Vorbohn's municipal guards are thick there this time of day, when the new stocks come in."

"Are they anticipating food riots?" Cordelia asked.

"No doubt, plus they like to get theirs first," said Koudelka. "Vordarian's going to have to put the army in soon, before the black market sucks all the food out of the rationing system." Kou, in the moments he forgot to pretend to be an artificial Vor, displayed an amazing and detailed grasp of black-market economics. Or, how *had* a grocer bought his son the education to gain entry to the fiercely competitive Imperial Military Academy? Cordelia

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

grinned under her breath, and looked up and down the street. It was an old section of town, predating lift-tubes, no buildings more than six flights high. Shabby, with plumbing and electricity and light-pipes cut into the architecture, added as afterthoughts.

Bothari led off, seeming to know where he was going. The maintenance did not improve in their direction of transit. Streets and alleys narrowed, channeling a moist aroma of decay, with an occasional whiff of urine. Lights grew fewer. Drou's shoulders hunched. Koudelka gripped his stick.

Bothari paused before a narrow, ill-lit doorway bearing a hand-lettered sign, *Rooms*. "This'll do." The door, an ancient non-automatic that swung on hinges, was locked. He rattled it, then knocked. After a long time, a little door within the door opened, and suspicious eyes stared out.

"Whatcha want?"

"Room."

"At this hour? Not damned likely."

Bothari pulled Drou forward. The stripe of light from the opening played over her face.

"Huh," grunted the door-muffled voice. "Well . . ." Some clinking of chains, the grind of metal, and the door swung open.

They all huddled into a narrow hallway featuring stairs, a desk, and an archway leading back to a darkened chamber. Their host grew even grumpier when he learned they desired only one room among the four of them. Yet he did not question it; apparently their real desperation lent their pose of poverty a genuine edge. With the two women and especially Koudelka in the party, no one seemed to leap to identify them as secret agents.

They settled into a cramped, cheap upstairs room, giving Kou and Drou first shot at the beds. As dawn seeped through the window, Cordelia followed Bothari back downstairs to forage.

"I should have realized we'd need to bring rations, to a city under siege," Cordelia muttered.

"It's not that bad yet," said Bothari. "Ah—best you don't talk, milady. Your accent."

"Right. In that case, strike up a conversation with this fellow, if you can. I want to hear the local view of things."

They found the innkeeper, or whatever he was, in the little room beyond the archway, which, judging from a counter and a couple of battered tables with chairs, doubled as a bar and a dining room. The man reluctantly sold them some seal-packed food and bottled drinks at inflated prices, while complaining about the rationing and angling for information about them.

"I been planning this trip for months," said Bothari, leaning on the bar, "and the damned war's bitched it."

The innkeep made an encouraging noise, one entrepreneur to another. "Oh? What's your strat?"

Bothari licked his lips, eyes narrowing in thought. "You saw that blonde?"

"Yo?"

"Virgin."

"No way. Too old."

"Oh, yeah. She can pass for class, that one. We were gonna sell it to some Vor lord at Winterfair. Get us a grubstake. But they've all skipped town.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Could try for a rich merchant, I guess. But she won't like it. I promised her a real lord."

Cordelia hid her mouth behind her hand, and tried not to emit any attention-drawing noises. It was an excellent thing Drou was not there to learn Bothari's idea of a cover story. Good God. Did Barrayaran men actually pay for the privilege of committing that bit of sexual torture upon uninitiated women?

The 'keep glanced at Cordelia. "You leave her alone with your partner without her duenna, you could lose what you came to sell."

"Naw," said Bothari. "He would if he could, but he took a nerve-disruptor bolt, once. Below the belt, like. He's out on medical discharge."

"What're you out on?"

"Discharged without prejudice."

This was a code-phrase for, Quit or be housed in the stockade, as Cordelia understood it; the ultimate fate of chronic troublemakers who fell just, but only just, short of felony.

"You put up with a spastic?" The 'keep jerked his head, indicating their upstairs room and its inhabitants.

"He's the brains of the outfit."

"Not too many brains, to come up here and try to do that bit of business now."

"Yeah. I think I could've had a better price for that same piece of meat here if I'd had her butchered and dressed."

"You got that right," snorted the 'keep glumly, eyeing the food piled on the counter before Cordelia.

"She's too good to waste, though. Guess I'll have to find something else, till this mess blows over. Kill some time. Somebody may be hiring muscle . . ." Bothari let this trail off. Was he running out of inspiration?

The 'keep studied him with interest. "Yo? I've had something in my eye I could use a, like, agent for. Been afraid for a week somebody else'd go after it first. You could be just what I need."

"Yo?"

The 'keep leaned forward across the bar, confidentially. "Count Vordarian's boys are giving out some fat rewards, down at ImpSec, for information-leading-to. Now, I wouldn't normally mess with ImpSec whoever was running it this week, but there's a strange fellow down the street who's taken a room. And he keeps to it, 'cept when he goes out for food, more food than one man might eat. . . . he's got someone in there with him no one ever sees. And he sure isn't one of us. I can't help thinking he might be . . . worth something to somebody, eh?"

Bothari frowned judiciously. "Could be dangerous. Admiral Vorkosigan blows back into town, they'll be looking real hard for that little list of informers. And you have an address."

"But you don't, seems. If you'd front it, I could give you a 10 percent split. I think he's big, that fellow. He's sure scared."

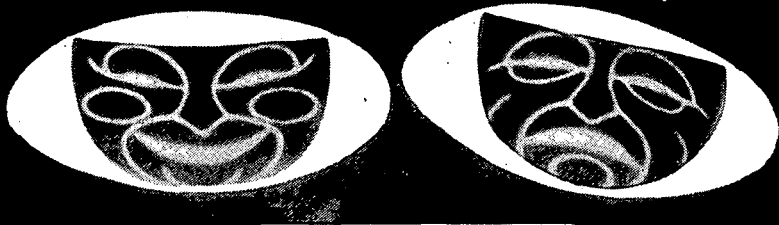
Bothari shook his head. "I been outcountry, and I came up here—can't you smell it, here in the city? Defeat, man. Vordarian's people look downright morbid to me. I'd think real carefully 'bout that list, if I was you."

The 'keep's lips tightened in frustration. "One way or another, opportunity's not going to last."

Cordelia grabbed for Bothari's ear to whisper; "Play along. Find out who it

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Talk About Off-Off Broadway!



A troupe of 26th-century thespians is getting its act together and taking it *beyond* off-Broadway...all the way to the stars! It's the only way to escape from the reactionary LORDS party, which has moved its chilling attacks from popular music to theater.
But can the Star Company finish its preparations, buy a ship, and hire a pilot, before its final curtain...?

On Sale in September
A Del Rey Hardcover
DEL REY #1 in Science Fiction and Fantasy, Published by Ballantine Books

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

is. Could be an ally." After a moment's thought she added, "Ask for 50 percent."

Bothari straightened, nodded. "Fifty-fifty," he said to the 'keep. "For the risk."

The 'keep frowned at Cordelia, but respectfully. He said reluctantly, "Fifty percent of something's better than a hundred percent of nothing, I suppose."

"Can you get me a look at this fellow?" asked Bothari.

"Maybe."

"Here, woman." Bothari piled the packages in Cordelia's arms. "Take these back to the room."

Cordelia cleared her throat, and tried for an imitation mountain accent. "You be careful, belike. City man'll take you."

Bothari favored the 'keep with an alarming grin. "Ah, he wouldn't try and cheat an old vet. More than once."

The 'keep smiled back nervously.

Cordelia dozed uneasily, and jerked awake as Bothari returned to their little room. He checked the hallway carefully before closing the door behind him. He looked grim.

"Well, Sergeant? What did you find out?" What if their fellow hider turned out to be someone as strategically important as, say, Admiral Kanzian? The thought frightened her. How could she resist being turned aside from her personal mission if some greater good were too crystal-clear. . . . Kou on a pallet on the floor and Drou on the other cot, both blinking sleep, sat up on their elbows to listen.

"It's Lord Vorpatril. Lady Vorpatril too."

"Oh, no." She sat upright. "Are you certain?"

"Oh, yes."

Kou scrubbed at his scalp, hair bent with sleep. "Did you make contact with them?"

"Not yet."

"Why not?"

"It's Lady Vorkosigan's call. Whether to divert from our primary mission."

And to think she'd wished for command. "Do they seem all right?"

"Alive, lying low. But—that git downstairs can't have been the only one to spot them. I've spiked him for now, but somebody else could get greedy any time."

"Any sign of the baby?"

He shook his head. "She hasn't had it yet."

"It's late! She was due over two weeks ago. How hellish." She paused. "Do you think we could escape the city together?"

"The more people in a party, the more conspicuous," Bothari said slowly. "And I caught a glimpse of Lady Vorpatril. She's real conspicuous. People'd notice her."

"I don't see how joining us now would improve their position. Their cover's worked for several weeks. If we succeed at the Residence, maybe we can try for them on the way back. Certainly have Illyan send loyalist agents to help them, if we get back. . . ." Damn. If she were an official raid, she'd have just the contacts the Vorpatrils needed. But then, if she were an official raid, she doubtless would not have come this way. She sat thinking. "No. No contact

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

yet. But we'd better do something to discourage your friend downstairs."

"I have," said Bothari. "Told him I knew where I could get a better price, and not risk my head later. We may be able to bribe him to help us."

"You'd trust him?" said Droushnakovi doubtfully.

Bothari grimaced. "As far as I can see him. I'll try to keep an eye on him, while we're here. 'Nother thing. I caught a broadcast on his vid in the back room. Vordarian had himself declared Emperor last night."

Kou swore. "So he's finally gone and done it."

"But what does it mean?" asked Cordelia. "Does he feel himself strong, or is it a move of desperation?"

"Last-ditch ploy to try to sway the space forces, I'd guess," said Kou.

"Will it really attract more men than it offends?"

Kou shook his head. "We have a real fear of chaos, on Barrayar. We've tried it. It's nasty. The Imperium has been identified as a source of order ever since Dorca Vorbarra broke the power of the warring Counts and unified the planet. Emperor is a real power-word, here."

"Not to me," Cordelia sighed. "Let's get some rest. Maybe by this time tomorrow it'll all be over." Hopeful/gruesome thought, depending on how it was construed. She counted the hours over for the thousandth time; one day left to penetrate the Residence, two to get back to Vorkosigan's territories . . . not much to spare. She felt like she was flying, faster and faster. And running out of turning room.

Last chance to call the whole thing off. A fine misting rain had brought early dusk to the city. Cordelia stared out the dirty window into the slick street, striped with the reflections of a few sickly amber-haloed streetlights. Only a few bundled shapes hurried along, heads down. It was as if war and the winter had inhaled autumn's last breath, and blew back out a deathly silence. *Nerves*, Cordelia told herself, straightened her back, and led her little party downstairs.

The desk was deserted. Cordelia was just deciding to skip such formalities as checking out—they had, after all, paid in advance—when the 'keep came stomping in through the front door, shaking cold drops from his jacket and swearing. He spotted Bothari.

"You! It's all your fault, you gutless git. We missed it, we bloody missed it, and now someone else will collect. That reward could've been mine, should've been mine—"

The 'keep's invective was cut off with a thump as Bothari pinned him to the wall. The man's toes stretched for the floor as Bothari's suddenly-feral face leaned into his. "*What happened?*"

"One of Vordarian's squads picked up that fellow. Looks like he led them back to his partner, too." The keep's voice wavered between anger and fear. "They've got them both, and I've got nothing!"

"Got them?" Cordelia repeated sickly.

"Picking 'em off right now, damn it."

There may still be a chance, Cordelia realized. Command decision or tactical compulsion, it hardly mattered now.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

She grabbed a stunner out of the satchel; Bothari stepped back and she buzzed the 'keep where he stood open-mouthed. Bothari shoved his inert form behind the desk. "We have to try for them. Drou, break out the rest of the weapons. Sergeant, lead us there. Go!"

And so she found herself running down the street toward a scene any right-minded Barrayaran would run the other way to avoid, a night-arrest by security forces. Drou kept up with Bothari. Koudelka, burdened with the satchel, lagged behind. Cordelia wished the mist was thicker.

The Vorpatrils's bolt-hole turned out to be two blocks down and one over, in a shabby narrow building much like the one they'd spent the day in. Bothari held up a hand, and they peered cautiously around the corner, then drew back. Two Security groundcars were parked out front of the little hostel, covering the entrance. But for themselves, the area was strangely empty. Koudelka came panting up behind.

"Droushnakovi," said Bothari, "circle around. Get a cross-fire position covering the other side of those groundcars. Watch out, they're sure to have men at the back door."

Yes, street tactics were clearly Bothari's call. Drou nodded, checked her weapons' charges, and walked as if casually across the corner, not even turning her head. Once out of the enemy's line of sight, she flowed into a silent run.

"We got to get a better position," Bothari muttered, risking his head once more around the corner. "Can't bloody see."

"A man and a woman walk down the street," Cordelia visualized desperately. "They stop to talk in a doorway. They goggle curiously at the security men, who are engrossed in their arrest—would we pass?"

"Not for long," said Bothari, "once they spot our energy weapons on their area scanners. But we'd last longer than two men. It's going to move fast, when it moves. Might pass just long enough. Lieutenant, cover us from here. Have the plasma arc ready, it's all we've got to stop a vehicle."

Bothari shoved his nerve disruptor out of sight under his jacket. Cordelia tucked her stunner in the waistband of her skirt, and lightly took Bothari's arm. They strolled around the corner.

This was a really stupid idea, Cordelia decided, matching steps to Bothari's booted stride. They should have set up hours ago, if they'd been going to try an ambush like this. Or they should have hooked Padma and Alys out hours ago. And yet—how long ago had Padma been spotted? Might they have fallen into some long-laid trap, and gone down together? *No might-have-beens. Pay attention to the now.*

Bothari's steps slowed, as they approached a deep shadowed doorway. He swung her in, and leaned with his arm on the wall, close to her. They were near enough now to the arrest scene to catch voices. Snatches of crackle from the comm links carried clearly in the damp air.

Just in time. Despite the shabby shirt and trousers, Cordelia readily recognized the dark-haired man pinned against the groundcar by one guard as Captain Vorpatril. His face was marred with a grated, bleeding contusion and

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Make Any 2 BOOKS for only $2.95

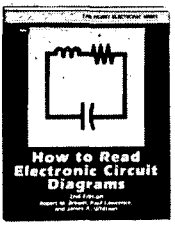
(a $38.90 value)

Your most complete source for electronics books for over 25 years!

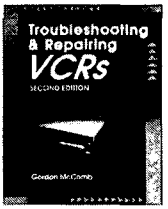
2867P $18.95

1604P $17.95

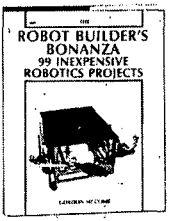
2707P $17.95



2880P $14.95



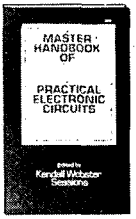
3777 $32.95
Counts as 2



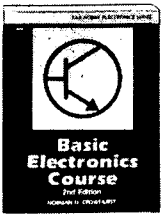
2800P $16.95

3031P $17.95

3374P $16.95



2980P $19.95



2613P $17.95

ELECTRONICS BOOK CLUB SM

c/o I. Asimov's Science Fiction Magazine Dept E81
380 Lexington Ave., New York, NY 10168-0035

☐YES! Please accept my membership in the Electronics Book Club and send me the 2 selections I have chosen, billing me $2.95. If not satisfied, I may return the books within 10 days without obligation and have my membership cancelled. I agree to purchase at least 3 additional books during the next 12 months at low Members' Prices and may cancel anytime thereafter. I will receive the Club Bulletin 15 times a year. If I want the Main Selection, I will do nothing, and it will be shipped automatically. If I want an alternate selection–or no selection at all–I will notify the Club by returning the card provided. I will receive Dividend Certificates with every book purchased at regular Club prices to qualify for additional special discounts of up to 80%. A shipping/handling charge and sales tax will be added to all orders.

Name _____

Address _____

City _____ State _____ Zip _____

Signature _____

Valid for new members only. Foreign applicants will receive special ordering instructions. Canada *must* remit in U.S. currency. This order subject to acceptance by the Electronics Book Club.

ANA1091

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

swollen lips, pulled back in a stereotypical fast-penta-induced smile. The smile slipped to anguish, and back again, and his giggles choked on moans.

Black-clad security men were bundling a woman out the hostel door and into the street. The security team's attention was drawn to her: Cordelia and Bothari's, too.

Alys Vorpatril wore only a nightgown and robe, with her feet jammed bare into flat shoes. Her dark hair was loose, flowing down wildly around her white face; she looked a fair madwoman. She was indeed conspicuously pregnant, black robe falling open around her white-gowned belly. The guard manhandling her had her arms locked behind her; her legs splayed for balance against his backward pull.

The guard commander, a full colonel, checked a report panel. "That's it, then. The lord and the heir." His eye locked to Alys Vorpatril's abdomen; he shook his head as if to clear it, and spoke into his comm link. "Fall back, boys, we're done here."

"What the hell are we supposed to do about this, Colonel?" asked his lieutenant uneasily. His voice blended fascination with dismay as he walked over to Lady Vorpatril and lifted her gown high. She had gained weight; these last two months; her chin and breasts were rounded, thighs thickened, belly padded out. He poked a curious finger deep into that soft white flesh. She stood silent, trembling, face on fire with rage at his liberty and eyes glistening dark with tears of fear. "Our orders are to kill the lord and the heir. It doesn't say her. Are we supposed to sit around and wait? Squeeze? Cut her open? Or," his voice went persuasive, "maybe just take her back to HQ?"

The guard holding her from behind grinned and ground his hips into her buttocks, mock-thrusts of unmistakable meaning. "We don't have to take her straight back, do we? I mean, this is Vor meat. What a chance."

The colonel stared at him, and spat disgust. "Corporal, you're perverted."

Cordelia realized with a shock that Bothari's riveted attention to the scene before them was no longer tactical. He was deeply aroused. His eyes seemed to glaze as she watched; his lips parted.

The guard colonel pocketed his comm link, and drew his nerve disruptor. "No." He shook his head. "We make this quick and clean. Step aside, Corporal."

Strange mercies . . .

The guard expertly popped Alys's knees and shoved her down, stepping back. Her hands flung out to the pavement, too late to save her swollen belly from a hard smack. Padma Vorpatril groaned through his fast-penta haze. The guard colonel raised his nerve disruptor and hesitated, as if uncertain whether to aim it at her head or torso.

"Kill them," Cordelia hissed in Bothari's ear, jerked out her stunner, and fired.

Bothari snapped not only awake, but over into some berserker mode. His nerve disruptor bolt hit the guard colonel at the same moment as Cordelia's stunner beam did, though she had drawn first. Then he was moving, a dark blur leaping behind a parked vehicle. He snapped off shots, blue crackles that electrified the air; two more guards fell as the rest took cover behind their

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

groundcars.

Alys Vorpatril, still on the pavement, curled up in a tight ball, trying to cover her abdomen with her arms and legs. Padma Vorpatril, penta-drunk, staggered bewilderedly toward her, arms out, apparently with some similar idea in mind. The guard lieutenant, rolling on the pavement toward cover, paused to aim his nerve disruptor at the distraught man.

The guard lieutenant's pause for accuracy was fatal; Droushnakovi's nerve disruptor cross-fire and Cordelia's stunner beam intersected upon his body—a millisecond too late. His nerve disruptor bolt took Padma Vorpatril squarely in the back of his head. Blue sparks danced, dark hair sparked orange, and Padma's body arced in a violent convulsion and fell twitching. Alys Vorpatril wailed, a short sharp cry cut off by a gasp. On her hands and knees, she seemed momentarily frozen between trying to crawl toward him, or away.

Droushnakovi's cross-fire vantage was perfect. The last guard was killed while still trying to raise the canopy of the armored groundcar. A driver, shielded inside the second vehicle, prudently chose to try and speed away. Koudelka's plasma arc bolt, set on high power, blasted into the groundcar as it accelerated past the corner. It skidded wildly, dragging an edge and trailing sparks, and crashed into the side of a brick building.

Yes, and didn't my whole strategy for this mission turn on our staying invisible? Cordelia thought dizzily, and ran forward. She and Droushnakovi reached Alys Vorpatril at the same moment; together they hoisted the shuddering woman to her feet.

"We have to get out of here," said Bothari, rising from his firing-crouch and coming toward them.

"No shit," agreed Koudelka, limping up and staring around at the sudden and spectacular carnage. The street was amazingly deserted. Not for long, Cordelia suspected.

"This way," Bothari pointed up an alley, narrow and dark. "Run."

"Shouldn't we try to take that car?" Cordelia gestured to the body-draped vehicle.

"No. Traceable. And it can't fit where we're going."

Cordelia was not sure if the wild-faced, weeping Alys was able to run anywhere, but she stuck her stunner back in her waistband and took one of the pregnant woman's arms. Drou took the other, and together they guided her in the sergeant's wake. At least Koudelka was no longer the slowest of the party.

Alys was crying, yet not hysterical; she glanced only once over her shoulder at her husband's body, then concentrated grimly on trying to run. She did not run well. She was hopelessly unbalanced, her arms wrapping her belly in an attempt to take up the shocks of her heavy footsteps. "Cordelia," she gasped. An acknowledgement of recognition; there was no time or breath for demands of explanation.

They had not lurched more than three blocks when Cordelia began to hear sirens from the area they were fleeing. But Bothari seemed controlled again, unpanicked. They traversed another narrow alley, and Cordelia realized they had crossed into a region of the city with

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

no streetlights, or indeed any lights at all. Her eyes strained in the misty dankness.

Alys stopped suddenly, and Cordelia skidded to a halt, almost jerking the woman off her feet. Alys stood for half a minute, bent over, gasping.

Cordelia realized that beneath her deceptive padding of fat, Alys's abdomen was hard as a rock. The back of her robe was soaking wet. "Are you going into labor?" she asked. She didn't know why she made that a question, the answer was obvious.

"This has been going on—for a day and a half," Alys blurted. She seemed unable to straighten. "I think my water broke back there, when that bastard knocked me down. Unless it's blood — should have passed out by now, if all that was blood—it hurts so much worse, now. . . ." Her breath slowed; she pulled her shoulders back with effort.

"How much longer?" asked Kou in alarm.

"How should I know? I've never done this before. Your guess is as good as mine," Lady Vorpatril snapped. Hot anger to warm cold fear. It wasn't enough warmth, a candle against a blizzard.

"Not much longer, I'd say," came Bothari's voice out of the dark. "We'd better go to ground. Come on."

Lady Vorpatril could no longer run, but managed a rapid waddle, stopping helplessly every two minutes. Then every one minute.

"Not going to make it all the way," muttered Bothari. "Wait here." He disappeared up a side—alley? The passages all seemed to be alleys here, cold and stinking, much too narrow for groundcars. They had passed exactly two people in the maze, huddled to one side of a passage in a heap, and stepped carefully around them.

"Can you do anything to, like, hold back?" asked Kou, watching Lady Vorpatril double over again. "We ought to . . . try and get a doctor or something."

"That's what that idiot Padma went out for," Alys ground out. "I begged him not to go . . . oh, God!" After another moment she added, in a surprisingly conversational tone, "The next time you're vomiting your guts out, Kou, let me suggest you just close your mouth and swallow hard . . . it's not exactly a voluntary reflex!" She straightened again, shivering violently.

"She doesn't need a doctor, she needs a flat spot," Bothari spoke from the shadows. "This way."

He led them a short distance to a wooden door, formerly nailed shut in an ancient solid stuccoed wall. Judging from the fresh splinters, he'd just kicked it open. Once inside, with the door pulled tight shut again, Droushnakovi at last dared pull a hand-light from the satchel. It illuminated a small, empty, dirty room. Bothari swiftly prowled its perimeters. Two inner doors had been broken open long ago, but beyond all was soundless and lightless and apparently deserted. "It'll have to do," said Bothari.

Cordelia wondered what the hell to do next. She knew all about placental transfers and surgical sections now, but for so-called normal births she had only theory to go on. Alys Vorpatril probably had even less grasp of the biology, Drou less still, and Kou was downright use-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Journey to the Red Planet with today's masters of science fiction!

ISAAC ASIMOV'S MARS

Edited by GARDNER DOZOIS

ISAAC ASIMOV'S
MARS
NINE FANTASTIC JOURNEYS TO THE RED PLANET
FEATURING STORIES BY
Brian W. Aldiss, Gregory Benford, Kim Stanley Robinson,
Allen M. Steele and others! Edited by Gardner Dozois

Nine brilliant stories from the pages of *Isaac Asimov's Science Fiction Magazine*, including selections from Brian W. Aldiss, Gregory Benford, and Allen M. Steele.

$4.50

SEPTEMBER
ACE
SCIENCE FICTION & FANTASY

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

less. "Has anyone here ever actually been in on one of these, before?"

"Not I," muttered Alys. Their looks met in rather too clear an understanding.

"You're not alone," said Cordelia stoutly. Confidence should lead to relaxation, should lead to something. "We'll all help."

Bothari said, in an oddly reluctant tone, "My mother used to do a spot of midwifery. Sometimes she'd drag me along to help. There's not that much to it."

Cordelia controlled her brows. That was the first time she'd heard the Sergeant say word one about either of his parents.

The Sergeant sighed, clearly realizing from their array of looks that he'd just put himself in charge. "Lend me your jacket, Kou."

Koudelka divested the garment gallantly, and made to wrap it around the shaking Lady Vorpatril. He looked a little more dismayed when the Sergeant put his own jacket around Lady Vorpatril's shoulders, then made her lie down on the floor and spread Koudelka's jacket under her hips. She looked less pale, lying down, less like she was about to pass out. But her breath stopped, then she cried out, as her abdominal muscles locked again.

"Stay with me, Lady Vorkosigan." Bothari murmured to Cordelia. For what? Cordelia wondered, then realized why as he knelt and gently pushed up Alys Vorpatril's nightgown. *He wants me for a control mechanism.* But the killing seemed to have bled off that horrifying wave of lust that had so distorted his face, back in the street. His gaze now was only normally interested. Fortunately, Alys Vorpatril was too self-absorbed to notice that Bothari's attempt at an expression of medical coolness was not wholly successful.

"Baby's head's not showing yet," he reported. "But soon."

Another spasm, and he looked around vaguely and added, "I don't think you'd better scream, Lady Vorpatril. They'll be looking by now."

She nodded understanding, and waved a desperate hand; Drou, catching on, rolled up a bit of cloth into a rag rope, and gave it to her to bite.

And so the tableau hung, for spasm after uterine spasm. Alys looked utterly wrung, crying very quietly, unable to stop her body's repeated attempts to turn itself inside out long enough to catch either breath or balance. The baby's head crowned, dark haired, but seemed unable to go further.

"How long is this supposed to take?" asked Kou, in a voice that tried to sound measured, but came out very worried.

"I think he likes it where he is," said Bothari. "Doesn't want to come out in the cold." This joke actually got through to Alys; her sobbing breath didn't change, but her eyes flashed in a moment of gratitude. Bothari crouched, frowned judiciously, hunkered around to her side, placed a big hand on her belly, and waited for the next spasm. Then he leaned.

The infant's head popped out, between Lady Vorpatril's bloody thighs, quick as that.

"There," said the Sergeant, sounding rather satisfied. Koudelka looked thoroughly impressed.

Cordelia caught the head between her hands, and eased the body out with the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

next contraction. The baby boy coughed twice, sneezed like a kitten in the awed silence, inhaled, grew pinker, and emitted a nerve-shattering wail. Cordelia nearly dropped him.

Bothari swore at the noise. "Give me your swordstick, Kou."

Lady Vorpatril looked up wildly. "No! Give him back to me, I'll make him be quiet!"

"Wasn't what I had in mind," said Bothari with some dignity. "Though it's an idea," he added as the wails went on. He pulled out the plasma arc and heated the sword briefly, on low power. Sterilizing it, Cordelia realized.

Placenta followed cord on the next contraction, a messy heap on Kou's jacket. She stared with covert fascination at the spent version of the supportive organ that had been of so much concern in her own case. *Time. This rescue's taken so much time. What are Miles's chances down to now?* Had she just traded her son's life for little Ivan's? Not-so-little Ivan, actually, no wonder he'd given his mother so much trouble. Alys must be blessed with an unusually wide pelvic arch, or she'd never have made it though this nightmare night alive.

After the cord drained white, Bothari cut it with the sterilized blade, and Cordelia self-knotted the rubbery thing as best she could. She mopped off the baby and wrapped him in their last spare clean shirt, and handed him at last into Alys's outstretched arms.

Alys looked at the baby and began crying again, muffled sobs. "Padma said . . . I'd have the best doctors. Padma said . . . there'd be no pain. Padma said he'd stay with me . . . damn you, Padma!" She clutched Padma's son to her. In an altered tone of mild surprise, she added, "Ow!" Infant mouth had found her breast, and apparently had a grip like a barracuda.

"Good reflexes," observed Bothari.

CHAPTER SEVENTEEN

"For God's sake, Bothari, we can't take her in *there*," hissed Koudelka.

They stood in an alley deep in the maze of the caravansary. A thick-walled building bulked an unusual three stories high in the cold, wet darkness. High on its stuccoed face, scabrous with peeling paint, yellow light glinted through carved shutters. An oil lamp burned dimly above a wooden door, the only entrance Cordelia could see.

"Can't leave her out here. She needs heat," replied the Sergeant. He carried Lady Vorpatril in his arms; she clung to him, wan and shivering. "It's a slow night anyway. Late. They're closing down."

"What is this place?" asked Droushnakovi.

Koudelka cleared his throat. "Back in the Time of Isolation, when this was the center of Vorbarr Sultana, it was a lord's residence. One of the minor Vorbarra princes, I think. That's why it's built like a fortress. Now it's a . . . sort of inn."

Oh, so this is your whorehouse, Kou, Cordelia managed not to blurt out. Instead she addressed Bothari, "Is it safe? Or is it likely to be stocked with informers like that last place?"

"Safe for a few hours," Bothari judged. "A few hours is all we have anyway." He set Lady Vorpatril down, handing her off to Droushnakovi, and

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

slipped inside after a muffled conversation through the door with some guardian. Cordelia tucked little Ivan more firmly to her, tugging her jacket over him for all the warmth she could share. Fortunately, he had slept quietly through their several-minute hike from the abandoned building to this place. In a few moments Bothari returned, and motioned them to follow.

They passed through an entryway, almost like a stone tunnel, with narrow slits in the walls and holes every half-meter above. "For defense, in the old days," whispered Koudelka, and Droushnakovi nodded understanding. No arrows or boiling oil awaited them tonight, though. A man as tall as Bothari, but wider, locked the door again behind them.

They came out in a large, dim room that had been converted into some sort of bar/dining room. It was occupied only by two dispirited-looking women in robes and a man snoring with his head on the table. As usual, an extravagant fireplace glowed with coals of wood.

They had a guide, or hostess. A rangy woman beckoned them silently toward the stairs. Fifteen years ago, or even ten years ago, she might have achieved a leggy aquiline look; now she was bony and faded, mis-clad in a gaudy magenta robe with drooping ruffles that seemed to echo her inherent sadness. Bothari swept up Lady Vorpatril and carried her up the steep stairs. Koudelka stared around uneasily, and seem to brighten slightly upon not finding someone.

The woman led them to a room off an upstairs hallway. "Change the sheets," muttered Bothari, and the woman nodded and vanished. Bothari did not set the exhausted Lady Vorpatril down. The woman returned in a few minutes, and whisked off the bed's rumpled coverings and replaced them with fresh linens. Bothari laid Lady Vorpatril in the bed and backed up. Cordelia tucked the sleeping infant in her arm, and Lady Vorpatril managed a grateful nod.

The—housewoman, Cordelia decided she would think of her—stared with a spark of interest at the baby. "That's a new one. Big boy, eh?" Her voice swung to a tentative coo.

"Two weeks old," stated Bothari in a repelling tone.

The woman snorted, hands on hips. "I do my bit of midwifery, Bothari. Two hours, more like."

Bothari shot Cordelia an odd look, almost a flash of fear. The housewoman help up a hand to ward off his frown. "Whatever you say."

"We should let her sleep," said Bothari, "till we're sure she isn't going to bleed."

"Yes, but not alone," said Cordelia. "In case she wakes up disoriented in a strange place." In the range of strange, Cordelia suspected, this place qualified as downright alien for the Vor woman.

"I'll sit with her a while," volunteered Droushnakovi. She glowered suspiciously at the housewoman, who was apparently leaning too near the baby for her taste. Cordelia didn't think Drou was at all fooled by Koudelka's pretense that they had stumbled into some sort of museum. Nor would Lady Vorpatril be, once she'd rested enough to regain her wits.

Droushnakovi plunked down in a shabby padded armchair, wrinkling her

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

OVER 50% OFF DURING OUR FIRST ANTHOLOGY WAREHOUSE SALE!

Our warehouse is full -- full of classic science fiction anthologies from **Analog Science Fiction/Science Fact and Isaac Asimov's Science Fiction Magazines** We need to make room for new books -- that's why we're having our first anthology warehouse sale. For only $19.95 plus postage and handling, we will send you an assortment of 10 classic science fiction anthologies. That's less than $2.00 a book and less than half the original price.

Please send your check or money order (no COD's please) to:

Anthology Warehouse Sale
Davis Publications, Inc.
P.O. Box 40
Vernon, NJ 07462

Please send me

___ An assortment of 10 classic science fiction anthologies ($19.95 plus $3.00 postage and handling)

Please send to:

Name_____

Address_____

City_____ ST_____ Zip_____

While we cannot accommodate requests for specific anthologies, we guarantee that you will be delighted with your surprise assortment. Also, at this great price, these anthologies will make wonderful gifts for your science-fiction-loving friends.

Allow 6-8 weeks for delivery. Available only in U.S. M4GC-5

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

nose at its musty smell. The others withdrew from the room. Koudelka went off to find whatever this old building used for a lavatory, and to try and buy them some food. An underlying tang to the air suggested to Cordelia that nothing in the caravansary was hooked up to the municipal sewerage. No central heating, either. At Bothari's frown, the housewoman made herself scarce.

A sofa, a couple of chairs, and a low table occupied a space at the end of the hall, lit by a red-shaded battery-driven lamp. Wearily, Bothari and Cordelia sat there. With the pressure off for a moment, not fighting the strain, Bothari looked ragged. Cordelia had no idea what she looked like, but she was certain it wasn't her best.

"Do they have whores on Beta Colony?" Bothari asked suddenly.

Cordelia fought mental whiplash. His voice was so tired the question sounded almost casual, except that Bothari never made casual conversation. How much had tonight's violent events disturbed his precarious balance, stressed his peculiar fault-lines? "Well . . . we have the L.P.S.T.s," she answered cautiously. "I guess they fill some of the same social functions."

"Ellpee Estees?"

"Licensed Practical Sexuality Therapists. You have to pass the government boards, and get a license. You're required to have at least an associate degree in psychotherapy. Except that all three sexes take up the profession. The hermaphrodites make the most money, they're very popular with the tourists. It's not . . . not a high social status job, but neither are they dregs. I don't think we have dregs on Beta Colony, we sort of stop at the lower middle class. It's like . . . " she paused, struggling for a cultural translation, "sort of like being a hairdresser, on Barrayar. Delivering a personal service to professional standards, with a bit of art and craft."

She'd actually managed to boggle Bothari, surely a first. His brow wrinkled. "Only Betans would think you needed a bleeding university degree. . . . Do *women* hire them?"

"Sure. Couples, too. The . . . the teaching element is rather more emphasized, there."

He shook his head, and hesitated. He shot her a sidelong look. "My mother was a whore." His tone was curiously distant. He waited.

"I'd . . . about figured that out."

"Don't know why she didn't abort me. She could have, she did those as well as midwifery. Maybe she was looking to her old age. She used to sell me to her customers."

Cordelia choked. "Now . . . now *that* would not have been allowed, on Beta Colony."

"I can't remember much about that time. I ran away when I was twelve, when I got big enough to beat up her damned customers. Ran with the gangs, till I was sixteen, passed for eighteen, and lied my way into the Service. Then I was out of here." His palms slid across each other, indicating how slick and fast his escape.

"The Service must have seemed like heaven, in comparison."

"Till I met Vorrutyer." He stared around vaguely. "There were more people around here, back then. It's almost dead here now." His voice went meditative. "There's a great deal of my

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

DO YOU WANT TO BE A SCIENCE FICTION WRITER?

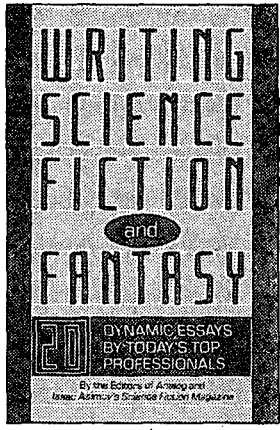
Presenting: **WRITING SCIENCE FICTION AND FANTASY**

From The Editors Of

SCIENCE FICTION **analog** SCIENCE FACT®

and

ISAAC **ASIMOV'S** SCIENCE FICTION MAGAZINE



SAVE OVER 25%

The inside tips and trade secrets of todays foremost professionals: **ISAAC ASIMOV** on *New Writers, Dialog,* and *Revisions* . . . **ROBERT A. HEINLEIN** on *Writing Speculative Fiction.* . . . **POUL ANDERSON** on *Imaginary Worlds,* **CONNIE WILLIS** on *Comedy.* . . . **NORMAN SPINRAD** on *Far, Far Futures.* . . . **JANE YOLEN** on *Fantasy* . . . **JAMES PATRICK KELLY** on *Characterization* . . **AND MUCH MORE!**

Buy from the editors directly and save over *25%* off the ***$18.95*** cover price!

☐ Please send me **WRITING SCIENCE FICTION AND FANTASY,** I've enclosed my check for **$13.95** (plus $3.00 for postage and handling)

☐ Please charge my ☐ Visa ☐ MasterCard ☐ American Express

My card # _____

Exp. date _____

NAME _____

ADDRESS _____

CITY _____ STATE ____ ZIP _____

M4WG-7

Mail To: Science Fiction Manual
P.O. Box 40
Vernon, N.J. 07462

Books will be shipped by UPS.
Please allow 2-3 weeks for delivery.

OUTSIDE US & POSS ADD $12.00 PRICE INCLUDES GST
ALSO AVAILABLE AT YOUR LOCAL BOOKSTORE.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

life I can't remember very well. It's like I'm all . . . patchy. Yet there are some things I want to forget and can't."

She wasn't about to ask, What? But she made an I-am-listening noise, down in her throat.

"Don't know who my father was. Being a bastard here is damn near as bad as being a mutant."

" 'Bastard' is used as a negative description of a personality, but it doesn't really have an objective meaning, in the Betan context. Unlicensed children aren't the same thing, and they're so rare, they're dealt with on a case-by-case basis." *Why is he telling me all this? What does he want of me? When he started, he seemed almost fearful; now he looks almost contented. What did I say right?* She sighed.

To her secret relief, Koudelka returned about then, bearing actual fresh sandwiches of bread and cheese, and bottled beer. Cordelia was glad for the beer, she'd have been dubious of the water in this place. She chased her first bite with a grateful swallow, and said, "Kou, we have to rearrange our strategy."

He settled awkwardly beside her, listening seriously. "Yes?"

"We obviously can't take Lady Vorpatril and the baby with us. And we can't leave her here. We left five corpses and a burning groundcar for Vordarian's security. They're going to be searching this area in earnest. But for just a little while longer, they will still be hunting for a very pregnant woman. It gives us a time window. We have to split up."

He filled a hesitant moment with a bite of sandwich. "Will you go with her, then, milady?"

She shook her head. "I must go with the Residence team. If only because I'm the only one who can say, This is impossible now, it's time to quit. Drou is absolutely required, and I need Bothari." *And, in some strange way, Bothari needs me.* "That leaves you."

His lips compressed bitterly. "At least I won't slow you down."

"You're not a default choice," she said sharply. "Your ingenuity got us into Vorbarr Sultana. I think it can get Lady Vorpatril out. You're her best shot."

"But it feels like you're running into danger, and I'm running away."

"A dangerous illusion. Kou, think. If Vordarian's goons catch her again, they'll show her no mercy. Nor you, nor especially the baby. There is no 'safer.' Only mortal necessity, and logic, and the absolute need to keep your head."

He sighed. "I'll try, milady."

" 'Try' is not good enough. Padma Vorpatril 'tried.' You bloody *succeed*, Kou."

He nodded slowly. "Yes, milady."

Bothari left to scrounge clothing for Kou's new persona of poor-young-husband-and-father. "Customers are always leaving things," he remarked. Cordelia wondered what he could collect here in the way of street clothes for Lady Vorpatril. Kou took food in to Lady Vorpatril and Drou. He returned with a very bleak expression on his face, and settled again beside Cordelia.

After a time he said, "I guess I understand now why Drou was so worried about being pregnant."

"Do you?" said Cordelia.

"Lady Vorpatril's troubles make

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

mine look . . . pretty small. God, that looked painful."

"Mm. But the pain only lasts a day." She rubbed her scar. "Or a few weeks. I don't think that's it."

"What is, then?"

"It's . . . a transcendental act. Making life. I thought about that, when I was carrying Miles. 'By this act, I bring one death into the world.' One birth, one death, and all the pain and acts of will between. I didn't understand certain Oriental mystic symbols like the Death-mother, Kali, till I realized it wasn't mystic at all, just plain fact. A Barrayaran-style sexual 'accident' can start a chain of causality that doesn't stop till the end of time. Our children change us . . . whether they live or not. Even though your child turned out to be chimerical this time, Drou was touched by that change. Weren't you?"

He shook his head in bafflement. "I wasn't thinking about all that. I just wanted to be normal. Like other men."

"I think your instincts are all right. They're just not enough. I don't suppose you could get your instincts and your intellect working together for once, instead of at cross-purposes?"

He snorted. "I don't know. I don't know . . . how to get through to her now. I said I was sorry."

"It's not all right between you two, is it?"

"No."

"You know what's bothered me most, on the journey up here?" said Cordelia.

"No . . . "

"I couldn't say goodbye to Aral. If . . . anything happens to me—or to him, for that matter—it will leave something hanging, unraveled, between us. And no way to ever make it right."

"Mm." He folded a little more into himself, slumped in the chair.

She meditated a bit. "What have you tried besides 'I'm sorry'? How about, 'How do you feel? Are you all right? Can I help? I love you,' there's a classic. Words of one syllable. Mostly questions, now I think on it. Shows an interest in starting a conversation, y'know?"

He smiled sadly. "I don't think she wants to talk to me anymore."

"Suppose," she leaned her head back, and stared unseeing down the hallway. "Suppose things hadn't taken such a wrong turn, that night. Suppose you hadn't panicked. Suppose that idiot Evon Vorhalas hadn't interrupted with his little horror show." There was a thought. Too painful, that might-not-have-been. "Drop back to square one. There you were, cuddling happily." Aral had used that word, cuddling. It hurt too much to think of Aral just now, too. "You part friends, you wake up the next morning, er, aching with unrequited love. . . what happens next, on Barrayar?"

"A go-between."

"Ah?"

"Her parents, or mine, would hire a go-between. And then they'd, well, arrange things."

"And you do what?"

He shrugged. "Show up on time for the wedding and pay the bill, I guess. Actually, the parents pay the bill."

No wonder the man was at a loss. "Did you want a wedding? Not just to get laid?"

"Yes! But . . . milady, I'm just

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

about half a man, on a good day. Her family'd take one look at me and laugh."

"Have you ever met her family? Have they met you?"

"No . . . "

"Kou, are you listening to yourself?"

He looked rather shamefaced. "Well . . ."

"A go-between. Huh." She stood up.

"Where are you going?" he asked nervously.

"Between," she said firmly. She marched down the hall to Lady Vorpatril's door, and stuck her head in. Droushnakovi was sitting watching the sleeping woman. Two beers and the sandwiches sat untouched on a bedside table.

Cordelia slipped within, and closed the door gently. "You know," she murmured, "good soldiers never pass up a chance to eat or sleep. They never know how much they'll be called on to do, before the next chance."

"I'm not hungry." Drou too had a folded-in look, as if caught in some trap within herself.

"Want to talk about it?"

She grimaced uncertainly, and moved away from the bed to a settee in the far corner of the room. Cordelia sat beside her. "Tonight," she said softly, "was the first time I was ever in a real fight."

"You did well. You found your position, you reacted—"

"No." Droushnakovi made a bitter hand-chopping gesture. "I didn't."

"Oh? It looked good to me."

"I ran around behind the building—stunned the two security men waiting at the back door. They never saw me. I got to my position, at the building's corner. I watched those men, tormenting Lady Vorpatril in the street. Insulting and staring and pushing and poking at her . . . it made me so angry, I switched to my nerve disruptor. I wanted to kill them. Then the firing started. And . . . and I hesitated. And Lord Vorpatril died because of it. My fault—"

"Whoa, girl! That goon who shot Padma Vorpatril wasn't the only one taking aim at him. Padma was so penta-soaked and confused, he wasn't even trying to take cover. They must have double-dosed him, to force him to lead them back to Alys. He might as easily have died from another shot, or blundered into our own cross-fire."

"Sergeant Bothari didn't hesitate," Droushnakovi said flatly.

"No," agreed Cordelia.

"Sergeant Bothari doesn't waste energy feeling . . . sorry, for the enemy, either."

"No. Do you?"

"I feel sick."

"You kill two total strangers, and expect to feel jolly?"

"Bothari does."

"Yes. Bothari enjoyed it. But Bothari is not, even by Barrayaran standards, a sane man. Do you aspire to be a monster?"

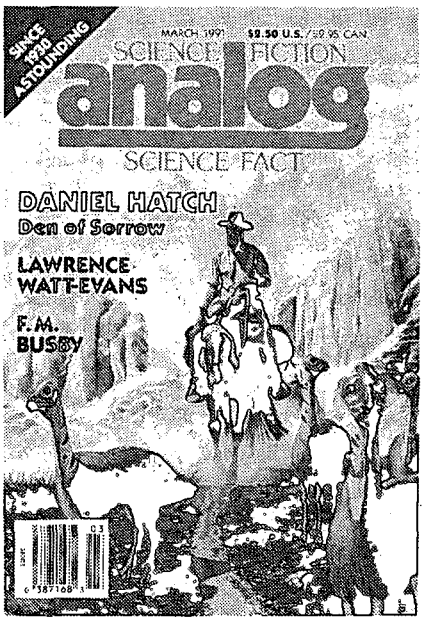
"You call him that!"

"Oh, but he's *my* monster. My good dog." She always had trouble explaining Bothari, sometimes even to herself. Cordelia wondered if Droushnakovi knew the Earth-historical origin of the term, *scapegoat*. The sacrificial

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

THE PAST, THE PRESENT, THE FUTURE, THE UNKNOWN.

SUBSCRIBE NOW AND SAVE 29% OFF THE BASIC PRICE
CALL TOLL-FREE 1-800-333-4561



YES SEND ME

☐ Please send me 18 issues for only $29.50 --save 29% off the basic price.

☐ Please send me 12 issues for only $19.97.

SCIENCE FICTION analog SCIENCE FACT®

Mail to: P.O. Box 7060, Red Oak, Iowa 51591

Name_____

Address_____

City_____ST_____Zip_____

Outside US & Poss. 12 for $25.97, 18 for $38.75. PRICE INCLUDES GST.
Please allow 6-8 weeks for delivery of first issue. All foreign orders must be paid in advance in U.S. currency.

We publish two double issues, in January and July.
Each double issue counts as two towards your subscription.

H4SC-6

LICENSED TO GIZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

animal that was released yearly into the wilderness, to carry the sins of its community away. . . . Bothari was surely her beast of burden, she saw clearly what he did for her. She was less certain what she did for him, except that he seemed to find it desperately important. "I, for one, am glad you are heartsick. Two pathological killers in my service would be an excess. Treasure that nausea, Drou."

She shook her head. "I think maybe I'm in the wrong trade."

"Maybe. Maybe not. Think what a monstrous thing an army of Botharis would be. Any community's arm of force—military, police, security—needs people in it who can do the necessary evil, and yet not be made evil by it. To do only the necessary, and no more. To constantly question the assumptions, to stop the slide into atrocity."

"The way that security colonel quashed that obscene corporal."

"Yes. Or the way that lieutenant questioned the colonel . . . I wish we might have saved him," Cordelia sighed.

Drou frowned deeply, into her lap.

"Kou thought you were angry with him," said Cordelia.

"Kou?" Droushnakovi looked up dimly. "Oh, yes, he was just in here. Did he want something?"

Cordelia smiled. "Just like Kou, to imagine all your unhappiness must center on him." Her smile faded. "I'm going to send him with Lady Vorpatril, to try and smuggle her and the baby out. We'll go our separate ways as soon as she's able to walk."

Drou's face grew worried. "He'll be in terrible danger. Vordarian's people will be rabid over losing her and the young lord tonight."

Yes, there was still a Lord Vorpatril to disturb Vordarian's geneological calculations, wasn't there? Insane system, that made an infant seem a mortal danger to a grown man. "There's no safety for anybody, till this vile war is ended. Tell me. Do you still love Kou? I know you're over your initial starry-eyed infatuation. You see his faults. Egocentric, and with a bug in his brain about his injuries, and terribly worried about his masculinity. But he's not stupid. There's hope for him. He has an interesting life ahead of him, in the Regent's service." Assuming they all lived through the next forty-eight hours. A passionate desire to live was a good thing to instill in her agents, Cordelia thought. "Do you want him?"

"I'm . . . bound to him, now. I don't know how to explain. . . . I gave him my virginity. Who else would have me? I'd be ashamed—"

"Forget that! After we bring off this raid, you're going to be covered in so much glory, men will be lining up for the status of courting you. You'll have your pick. In Aral's household, you'll have a chance to meet the best. What do you want? A general? An Imperial minister? A Vor lordling? An off-world ambassador? Your only problem will be choosing, since Barrayaran custom stingily only allows you one husband at a time. A clumsy young lieutenant hasn't got a prayer of competing with all those polished seniors."

Droushnakovi smiled, a bit skeptically, at Cordelia's painted vision. "Who says Kou won't be a general

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

himself someday?'' she said softly. She sighed, her brow creasing. ''Yes. I still want him. But . . . I guess I'm afraid he'll hurt me again.''

Cordelia thought that one over. ''Probably. Aral and I hurt each other all the time.''

''Oh, not you two, milady! You seem so, so perfect.''

''Think, Drou. Can you imagine what mental state Aral is in right this minute, because of my actions? I can. I do.''

''Oh.''

''But pain . . . seems to me an insufficient reason not to embrace life. Being dead is quite painless. Pain, like time, is going to come on regardless. Question is, what glorious moments can you win from life in addition to the pain?''

''I'm not sure I follow that, milady. But . . . I have a picture, in my head. Of me and Kou, on a beach, all alone. It's so warm. And when he looks at me, he sees me, really sees me, and loves me. . . .''

Cordelia pursed her lips. ''Yeah . . . that'll do. Come with me.''

The girl rose obediently. Cordelia led her back into the hall, forcefully arranged Kou at one end of the sofa, sat Drou down on the other, and plopped down between them. ''Drou, Kou has a few things to say to you. Since you apparently speak different languages, he's asked me to be his interpreter.''

Kou made an embarrassed negative motion over Cordelia's head.

''That hand-signal means, I'd rather blow up the rest of my life than look like a fool for five minutes. Ignore it,'' Cordelia said. ''Now, let me see. Who begins?''

There was a short silence. ''Did I mention I'm also playing the parts of both your parents? I think I shall begin by being Kou's Ma. Well, son, and have you met any nice girls yet? You're almost twenty-six, you know. I saw that vid,'' she added in her own voice as Kou choked. ''I have her style, eh? And her content. And Kou says, Yes, Ma, there's this gorgeous girl. Young, tall, smart—and Kou's Ma says, Tee hee! And hires me, your friendly neighborhood go-between. And I go to your father, Drou, and say, there's this young man. Imperial lieutenant, personal secretary to the Lord Regent, war hero, slated for the inside track at Imperial HQ—and he says, Say no more! We'll take him. Tee-hee. And—''

''I think he'll have more to say than that!'' interrupted Kou.

Cordelia turned to Droushnakovi. ''What Kou just said was, he thinks your family won't like him 'cause he's a crip.''

''No!'' said Drou indignantly. ''That's not so—''

Cordelia held up a restraining hand. ''As your go-between, Kou, let me tell you. When one's only lovely daughter points and says firmly, Da, I want *that* one, a prudent Da responds only, Yes, dear. I admit, the three large brothers may be harder to convince. Make her cry, and you could have a serious problem in the back alley. By which I presume you haven't complained to them yet, Drou?''

She stifled an involuntary giggle. ''No!''

Kou looked like this was a new and daunting thought.

''See,'' said Cordelia, ''you can still

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

evade fraternal retribution, Kou, if you scramble." She turned to Drou. "I know he's been a lout, but I promise you, he's a trainable lout."

"I *said* I was sorry," said Kou, sounding stung.

Drou stiffened. "Yes. Repeatedly," she said coldly.

"And there we come to the heart of the matter," Cordelia said slowly, seriously. "What Kou actually means, Drou, is that he isn't a bit sorry. The moment was wonderful, you were wonderful, and he wants to do it again. And again and again, with nobody but you, forever, socially-approved and uninterrupted. Is that right, Kou?"

Kou looked stunned. "Well—yes!"

Drou blinked. "But . . . that's what I wanted you to say!"

"It was?" He peered over Cordelia's head.

This go-between system may have some real merits. But also its limits. Cordelia rose from between them, and glanced at her chrono. The humor drained from her spirit. "You have a little time yet. You can say a lot in a little time, if you stick to words of one syllable."

CHAPTER EIGHTEEN

Pre-dawn in the alleys of the carvansary was not so pitchy-black as night in the mountains. The foggy night sky reflected back a faint amber glow from the surrounding city. The faces of her friends were grey blurs, like the very earliest of ancient photographs; Cordelia tried not to think, *like the faces of the dead.*

Lady Vorpatril, cleaned and fed and rested a few hours, was still none too steady, but she could walk on her own. The housewoman had contributed some surprisingly sober clothes for her, a calf-length grey skirt and sweaters against the cold. Koudelka had exchanged all his military gear for loose trousers, old shoes, and a jacket to replace the one that had suffered from its emergency obstetrical use. He carried baby Lord Ivan, now makeshift-diapered and warmly wrapped, completing the picture of a timid little family trying to make it out of town to the wife's parents in the country before the fighting started. Cordelia had seen hundreds of refugees just like them, in passing, on her way into Vorbarr Sultana.

Koudelka inspected his little group, ending with a frowning look at the swordstick in his hand. Even when seen as a mere cane, the satin wood, polished steel ferrule, and inlaid grip did not look very middle-class. Koudelka sighed. "Drou, can you hide this somehow? It's conspicuous as hell with this outfit, and more of a hindrance than a help when I'm trying to carry this baby."

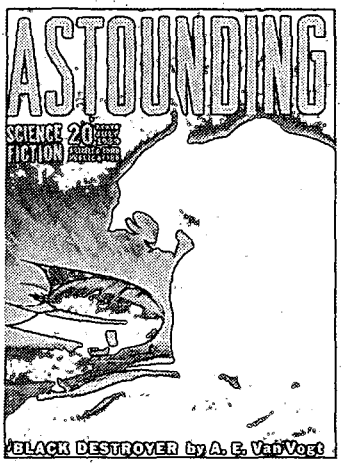
Droushnakovi nodded, and knelt and wrapped the stick in a shirt, and stuffed it into the satchel. Cordelia remembered what had happened the last time Kou had carried that stick down to the caravansary, and stared nervously into the shadows. "How likely are we to be jumped by someone at this hour? We don't look rich, certainly."

"Some would kill you for your clothes," said Bothari glumly, "with winter coming on. But it's safer than usual. Vordarian's troops have been sweeping the quarter for 'volunteers,' to help dig those bomb shelters in the city parks."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

A TREASURE FROM THE GOLDEN AGE OF SCIENCE FICTION!

A Hardbound Copy of the July 1939 Edition of ASTOUNDING!



Critics mark this issue as the first "great" issue edited by John W. Campbell, Jr. It contains the first published story, "Black Destroyer," by A.E. van Vogt and the first story by Isaac Asimov to be published in ASTOUNDING.

This hardbound facsimile of the July 1939 issue also contains an Epilogue in which A.E. van Vogt, Asimov, and Rocklynne comment on their own work, their feelings towards ASTOUNDING, and especially their relationships with John W. Campbell, Jr.

This classic collector's item is now only $9.95 but act fast, supply is limited. Please send my 1939 ASTOUNDING to:

Name_____

Address_____

City_____ State_____ Zip_____

Send check or money order (No COD's) to: Analog, P.O. Box 40, Vernon, NJ 07462
Canadian or Foreign orders add $5.00. Allow 6-8 weeks for delivery.

M4BG-1

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"I never thought I'd approve of slave labor," Cordelia groaned.

"It's nonsense anyway," Koudelka said. "Even if completed they wouldn't shelter enough people. But it looks impressive, and it sets up Lord Vorkosigan as a threat, in people's minds."

"Besides," Bothari lifted his jacket to reveal the silvered gleam of his nerve disruptor, "this time I've got the right weapon."

This was it, then. Cordelia embraced Alys Vorpatril, who hugged her back, murmuring, "God help you, Cordelia. And God rot Vidal Vordarian in hell."

"Go safely. See you back at Tanery Base, eh?" Cordelia glanced at Koudelka. "Live, and so confound our enemies."

"We'll tr—we will, milady," said Koudelka. Gravely, he saluted Droushnakovi. There was no irony in the military courtesy, though perhaps a last tinge of envy. She returned him a slow nod of understanding. Neither chose to confuse the moment with further words. The two groups parted in the clammy darkness. Drou watched over her shoulder till Koudelka and Lady Vorpatril turned out of sight, then picked up the pace.

They passed from black alleys to lit streets, from deserted darkness to occasional other human forms, hurrying about early winter morning business. Everybody seemed to cross streets to avoid everybody else, and Cordelia felt a little less noticeable. She stiffened inwardly when a municipal guard groundcar drove slowly past them, but it did not stop.

They paused, across the street, to be certain their target building had been unlocked for the morning. The structure was multi-storied, in the utilitarian style of the building boom that had come on the heels of Ezar Vorbarra's ascent to power and stability thirty-plus years ago. It was commercial, not governmental; they crossed the lobby, entered the lift tubes, and descended unimpeded.

Drou began seriously looking over her shoulder when they reached the subbasement. "*Now* we look out of place." Bothari kept watch as she bent and forced a lock to a utility tunnel. She led them down it, taking two cross-turns. The passage was clearly used frequently, as the lights remained on. Cordelia's ears strained for footsteps not their own.

An access cover was bolted to the floor. Droushnakovi loosened it quickly. "Hang and drop. It's not much more than two meters. It'll likely be wet."

Cordelia slid into the dark circle, landing with a splash. She lit her handlight. The water, slick and black and shimmering, came to her booted ankles in the synthacrete tube. It was icy cold. Bothari followed. Drou knelt on his shoulders, to coax the cover back into place, then splashed down beside her. "There's about a half a kilometer of this storm sewer. Come on," she whispered. This close to goal, Cordelia needed no urging to hurry.

At the half-kilometer, they climbed into a darkened orifice high on the curving wall that led to a much older and smaller tunnel, made of time-blackened brick. Knees and backs bent, they shuffled along. It must be particularly painful for Bothari, Cordelia reflected. Drou

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

slowed, and began tapping on the tunnel's roof with the steel ferrule of Koudelka's stick. When the ticks became hollow tocks, she stopped. "Here. It's meant to swing downward. Watch it." She released the sheath, and slid the blade carefully between a line of slimy bricks. A click, and the false-brick-lined panel flopped down, nearly cracking her head. She returned the sword to its casing. "Up." She pulled herself through.

They were in another ancient drain, even narrower. It sloped more steeply upward. They crouched along, their clothes brushing the sides and picking up damp stains. Drou rose suddenly, and clambered out over a pile of broken bricks into a dark, pillared chamber.

"What is this place?" whispered Cordelia. "Too big for a tunnel . . ."

"The old stables," Drou whispered back. "We're under the Residence grounds, now."

"It doesn't sound so secret to me. Surely they must appear in old drawings and elevations. People—Security—must know this is here." Cordelia stared into the dim, musty recesses, past pale arches picked out by their wavering hand-lights.

"Yes, but this is the cellar of the *old* old stables. Not Dorca's, but Dorca's great-uncle's. He kept over three hundred horses. They burned down in a spectacular fire about two hundred years ago, and instead of rebuilding on the site, they knocked them flat and put up the *new* old stables on the east side, downwind. Those got converted to staff apartments in Dorca's day. Most of the hostages are being kept over there now." Drou marched firmly forward, as if sure of her ground. "We're to the north of the main Residence now, under the gardens Ezar designed. Ezar apparently found this old cellar and arranged this passage with Negri, thirty years ago. A bolt-hole that even their own Security didn't know about. Trusting, eh?"

"Thank you, Ezar," Cordelia murmured wryly.

"Once we're out of Ezar's passage, the real risk starts," the girl commented.

Yes, they could still pull out now, retrace their steps and no one the wiser. *Why have these people so blithely handed me the right to risk their lives? God, I hate command.* Something skittered in the shadows, and somewhere, water dripped.

"Here," said Droushnakovi, shining her light on a pile of boxes. "Ezar's cache. Clothes, weapons, money—Captain Negri had me add some women's and boy's clothes to it just last year, at the time of the Escobar invasion. He was keyed up for trouble about it, but the riots never reached here. My clothes should only be a little big for you."

They discarded their beslimed street clothes. Droushnakovi shook out clean dresses, suitable for senior Residence women servants too superior for menial's uniforms; the girl had worn them for just such service. Bothari unbundled his black fatigue uniform again from the satchel, and donned it, adding correct Imperial Security insignia. From a distance he made a proper guard, though he was perhaps a little too rumpled to pass inspection up close. As Drou had promised, a complete array of weapons

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

lay fully charged in sealed cases. Cordelia chose a fresh stunner, as did Drou; their eyes met. "No hesitation this time, eh?" Cordelia murmured. Drou nodded grimly. Bothari took one of each, stunner, nerve disruptor, and plasma arc. Cordelia trusted he wouldn't clank when he walked.

"You can't fire that thing indoors," Droushnakovi objected to the plasma arc.

"You never know," shrugged Bothari.

After a moment's thought, Cordelia added the swordstick, tightening a loop of her belt around its grip. A serious weapon it wasn't, but it had proved an unexpectedly useful tool on this trip. *For luck.* Then from the last depths of the satchel, Cordelia pulled what she privately considered to be the most potent weapon of all.

"A shoe?" said Droushnakovi blankly.

"Gregor's shoe. For when we make contact with Kareen. I rather fancy she still has the other." Cordelia nested it deeply in the inner pocket of one of Drou's Vorbarra-crested boleros, worn over Cordelia's dress to complete the picture of an inner Residence worker.

When their preparations were as complete as possible, Drou led them again into narrowing darkness. "Now we're under the Residence itself," she whispered, turning sideways. "We go up this ladder, between the walls. It was added after, there's not much space."

This proved an understatement. Cordelia sucked in her breath and climbed after her, sandwiched flat between two walls, trying not to accidently touch or thump. The ladder was made, naturally, of wood. Her head throbbed with exhaustion and adrenalin. She mentally measured the width. Getting the uterine replicator back down this ladder was going to be a bitch. She told herself sternly to think positively, then decided that was positive. *Why am I doing this? I could be back at Tanery Base with Aral right now, letting these Barrayarans kill each other all day long, if it is their pleasure. . . .*

Above her, Drou stepped aside onto some sort of tiny ledge, a mere board. When Cordelia came up beside her, she gestured "stop" and extinguished her hand-light. Drou touched some silent latch mechanism, and a wall panel swung outward before them. Clearly, everything had been kept well-oiled right up to Ezar's death.

They looked out into the old emperor's bedchamber. They had expected it to be empty. Drou's mouth opened in a voiceless O of dismay and horror.

Ezar's huge old carved wooden bed, the one he'd for God's sake *died* in, was occupied. A shaded light, dimmed to an orange glow, cast highlight and shadow across two bare-torsoed, sleeping forms. Even in this foreshortened view, Cordelia instantly recognized the dish-face and moustache of Vidal Vordarian. He sprawled across four-fifths of the bed, his heavy arm flung possessively across Princess Kareen. Her dark hair was tumbled on the pillow. She slept in a tight tiny ball in the upper corner of the bed, facing outward, white arms clutched to her chest, nearly in danger of falling out.

Well, we've reached Kareen. But there's a hitch. Cordelia shivered with the impulse to shoot Vordarian in his

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Your Window to the Future

Apply for the new Far Travelers MasterCard!

"Every time you use The Far Travelers Card a percentage of the amount charged goes to support the activities of the National Space Society at no extra cost to you."
Joel Davis — President, *Analog Science Fiction/ Science Fact.*®

Encourage humanity's commitment to the exploration of space.

Use *the* MasterCard for Science Fiction Readers.

No annual fee*

*(for the first year, and later depending upon usage.)

Annual Percentage Rate for Purchases	Variable Rate Information	Grace Period for Repayment of the Balance for Purchases
Variable Rate 16.65%	Your Annual Percentage rate may vary. The Rate is determined by adding 7.9% to the New York Prime Rate as published in the Wall Street Journal on the first Friday of the preceding month.	Not less than 25 days
Method of Computing the Balance for Purchases	**Annual Fee**	**Minimum Finance Charge**
Two-cycle Average Daily Balance Excluding New Purchases	$20.00*	50¢ If it would otherwise be greater than zero and less than 50¢

Other Charges	*There is no Annual Fee for the first year.
Over-the-Credit-Limit Fee: $15 Cash Advances: 2% (minimum $2, maximum $10) Return Check Fee: $15 Late Payment Fee: 5% of each payment due or $5, whichever is lower	The $20 Annual Fee will be waived in subsequent years for card accounts with total annual purchases in the previous year of at least $6,500.

The information about the costs of the cards described in this application is accurate as of April 1991.
This information may change after that date.
To find out what may have changed, call us at (406) 761-8922 or 1-800-735-5536,
or write to BanCard Corporation of Montana, P.O. Box 5023, Great Falls, Montana 59403-9968.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The Far Travelers™ Card

MasterCard®

APPLICANT INFORMATION 001-004-00002

FIRST NAME | INITIAL | LAST NAME

DATE OF BIRTH / / | SOCIAL SECURITY NUMBER – – | HOME PHONE ( ) -

ADDRESS | CITY | STATE | ZIP CODE | YEARS THERE

PREVIOUS ADDRESS | CITY | STATE | ZIP CODE | YEARS THERE

PRESENT EMPLOYER | WORK PHONE ( ) - | YEARS THERE

PREVIOUS EMPLOYER (If with present employer less than one year) | WORK PHONE ( ) - | YEARS THERE

GROSS ANNUAL INCOME* $ | TOTAL MONTHLY PAYMENTS (INCLUDE HOME, CAR, PERSONAL, CREDIT CARD LOANS, ETC.) $ | PREFERRED CREDIT LIMIT $

NEAREST RELATIVE NOT LIVING WITH ME | RELATIONSHIP | TELEPHONE ( ) -

CO–APPLICANT INFORMATION

FIRST NAME | INITIAL | LAST NAME

DATE OF BIRTH / / | SOCIAL SECURITY NUMBER – – | HOME PHONE ( ) -

ADDRESS | CITY | STATE | ZIP CODE | YEARS THERE

PREVIOUS ADDRESS | CITY | STATE | ZIP CODE | YEARS THERE

PRESENT EMPLOYER | WORK PHONE ( ) - | YEARS THERE

PREVIOUS EMPLOYER (If with present employer less than one year) | WORK PHONE ( ) - | YEARS THERE

GROSS ANNUAL INCOME* $ | TOTAL MONTHLY PAYMENTS (INCLUDE HOME, CAR, PERSONAL, CREDIT CARD LOANS, ETC.) $

*Your alimony, child support and separate income need not be disclosed if you do not wish to have it considered as a basis for repaying this obligation.

I authorize BanCard Corporation of Montana to check my credit and employment. I agree that I will be subject to the terms and conditions of the Cardholder Agreement sent with the card.

X _____ Applicant's Signature Date

X _____ Co–Applicant's Signature Date

For Bank Use Only	Account Number	Date	No. of Cards	Credit Line	Approved by

Please mail this application or a photocopy to:

BanCard Corporation, P.O. Box 5023, Great Falls, Montana 59403-9968.

LICENSED TO ONE.ORG
ELECTRONIC REPRODUCTION PROHIBITED

sleep. But the energy discharge must set off alarms. Until she had Miles's replicator in her hand, she was not ready to run for it. She motioned Drou to close the panel again, and breathed "Down," to Bothari, waiting beneath her. They reversed their painstaking four-flight climb. Back in the tunnel, Cordelia turned to face the girl, who was crying quite silently.

"She's sold out to him," Droushnakovi whispered, her voice shaking with grief and revulsion.

"If you'll explain to me what power-base you imagine she has to resist the man right now, I'd be interested to hear it," said Cordelia tartly. "What do you expect her to do, fling herself out a window to avoid a fate worse than death? She did fates worse than death with Serg, I don't think they hold any more emotion for her."

"But if only we'd got here sooner, I might—we might have saved her."

"We still might."

"But she's really sold out!"

"Do people lie in their sleep?" asked Cordelia. At Drou's confused look, she explained. "She didn't look like a lover to me. She lay like a prisoner. I promised we'd try for her, and we will." *Time.* "But we'll go for Miles first. Let's try the second exit."

"We'll have to pass through more monitored corridors," Droushnakovi warned.

"Can't be helped. If we wait, this place will start waking up, and we'll hit more people."

"They're coming on duty in the kitchens right now," sighed Drou. "I used to stop in for coffee and hot pastries, some days."

Alas, a commando raid could not knock off for breakfast. This was it. Go or no-go? Was it bravery, or stupidity, that drove her on? It couldn't be bravery, she was sick with fear, the same hot acid nausea she'd felt just before combat during the Escobar war. Familiarity with the sensation didn't help. *If I do not act, my child will die.* She would simply have to do without courage. "Now," Cordelia decided. "There will be no better chance."

Up the narrow ladder again. The second panel opened in the old emperor's private office. To Cordelia's relief it still remained dark and unused, untouched since it had been cleaned out and locked after Ezar's death last spring. His comconsole desk, with all its Security overrides, was disconnected, wiped of secrets, dead as its owner. The windows were still dark, with the tardy winter morning.

Kou's stick banged against Cordelia's calf as she strode across the room. It did look odd, hitched to her waist, too obviously like a sword. On a bureau in the office was a wide antique tray holding a flat ceramic bowl, typical of the knick-knacks that cluttered the Residence. Cordelia laid the stick across the tray and lifted it solemnly, servant-fashion.

Droushnakovi nodded approval. "Carry it halfway between your waist and your chest," she whispered. "And keep your spine straight, they always told me."

Cordelia nodded. They closed the panel behind them, straightened themselves, and entered the lower corridor of the north wing.

Two Residence serving women and

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

a security guard. At first glance, they looked perfectly natural in this setting, even in these troubled times. A guard corporal standing duty at the foot of the Petite Stairway at the corridor's west end came to attention at the sight of Bothari's ImpSec and rank tabs; they exchanged salutes. They were passing out of sight up around the stairs' curve before he looked again, harder. Cordelia steeled herself not to break into a panicked run. A subtle piece of misdirection: the two women couldn't be a threat, they were already guarded. That their guard could be the threat, might escape the corporal for minutes yet.

They turned into the upper corridor. There. Behind that door, according to the loyalists' reports, Vordarian kept the captured replicator. Right under his eye. Perhaps as a human shield; any explosive dropped on Vordarian's quarters must kill tiny Miles as well. Or did the Barrayaran think of her damaged child as human?

Another guard stood outside that door. He stared at them suspiciously, his hand touching his sidearm. Cordelia and Droushnakovi walked on by without turning their heads. Bothari's exchanged salute flowed smoothly into a clip to the man's jaw that snapped his head back into the wall. Bothari caught him before he dropped. They swung the door open and dragged the guard inside; Bothari took his place in the corridor. Silently, Drou closed the door.

Cordelia stared wildly around the little chamber, looking for automatic monitors. The room might formerly have been a bedroom of the sort once slept in by body servants to be near their Vorish masters, or perhaps an unusually large wardrobe; it didn't even have a window overlooking some dull inner court. The portable uterine replicator sat on a cloth-covered table in the exact center of the room. Its lights still glowed their reassuring greens and ambers. No feral red eyes warned of malfunction yet. A breath half-agony, half-relief, tore from Cordelia's lips at the sight of it.

Droushnakovi gazed around the room unhappily.

"What's wrong, Drou?" whispered Cordelia.

"Too easy," the girl muttered.

"We're not done yet. Say 'easy' an hour from now." She licked her lips, shaken by secret subliminal agreement with Droushnakovi's evaluation. No help for it. Grab and go. Speed, not secrecy, was their hope now.

She set the tray down on the table, reached for the replicator's carrying handle, and stopped. Something, something wrong . . . she stared more closely at the indicators and readouts. The oxygenation monitor wasn't even functioning. Though its indicator light glowed green, the nutrient fluid level read 00.00. *Empty.*

Cordelia's mouth opened in a silent wail. Her stomach churned. She leaned closer, eyes devouring all the illogical hash of false readouts. Her hagridden nightmare, made suddenly and horribly real—had they dumped it on the floor, into a drain, down a toilet? Had Miles died quickly, mercifully smashed, or had they let the tiny infant, bereft of life-support, twitch to death in agony while they watched? Perhaps they hadn't even bothered to watch. . . .

The serial number. Look at the serial

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

number. A hopeless hope, but . . . she forced her blurring eyes to focus, her racing mind to try and remember. She had fingered that number, pensively, back in Vaagen and Henri's lab, meditating upon this piece of technology and the distant world that had created it—and this number didn't match. Not the same replicator, not Miles's! One of the sixteen others, used to bait this trap.

Her heart sank. How many other traps were laid? She pictured herself running frantically from replicator to replicator, like a distraught child in some cruel game of keep-away, searching. . . . *I shall go mad.*

No. Wherever the real replicator was, it was near to Vordarian's person. Of that, she was sure. She knelt beside the table, putting her head down a moment to fight the blood-drained black balloons that clouded her vision and threatened to empty her mind of consciousness. She lifted the cloth. *There.* A pressure-sensor. Was this Vordarian's own clever idea? Slick and vicious. Drou bent to follow her gesture.

"A trap," whispered Cordelia. "Lift the replicator, and the alarms go off."

"If we disarm it—"

"No. Don't bother. It's false bait. Not the right replicator. It's an empty, with the controls buggered to make it look like it's running." Cordelia tried to think clearly through the pounding in her skull. "We'll have to retrace our steps. Back down, and up. I hadn't expected to encounter Vordarian here. But I guarantee he'll know where Miles is. A little old-fashioned interrogation. We'll be working against time. When the alarm goes up—"

Footsteps thudded in the corridor, and shouts. The chirping buzz of stunner fire. Swearing, Bothari flung himself backward through the door. "That's done it. They've spotted us."

When the alarm goes up, it's all over, Cordelia's thought completed itself, in a vertigo of loss. No window, one door, and they'd just lost control of their only exit. Vordarian's trap had worked after all. *May Vidal Vordarian rot in hell. . . .*

Droushnakovi clutched her stunner. "We won't surrender you, milady. We'll fight to the end."

"Rubbish," snapped Cordelia. "There's nothing our deaths would buy here but the deaths of a few more of Vordarian's goons. Meaningless."

"You mean we should just quit?"

"Suicidal glory is the luxury of the irresponsible. We're not giving up. We're waiting for a better opportunity to win. Which we can't take if we're stunned or nerve-fried." Of course, if that had been the real replicator on the table . . . she was insane enough by now to sacrifice these people's lives for her son's, Cordelia reflected ruefully, but not yet mad enough to trade them for nothing. She hadn't grown that Barrayaran yet.

"You give yourself to Vordarian as a hostage," Bothari warned.

"Vordarian has held me hostage since the day he took Miles," Cordelia said sadly. "This changes nothing."

A few minutes of shouted negotiations through the door accomplished their surrender, despite the hair-trigger nerves of the security guards. They tossed out their weapons. The guards ran a scan for power packs to be sure, then four of them piled into the little

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

room to frisk their new prisoners. Two more waited outside as back-up. Cordelia made no sudden moves to startle them. A guard frowned puzzlement when the interesting lump in Cordelia's vest turned out to be only a child's shoe. He laid it on the table next to the tray.

The commander, a man in the maroon and gold Vordarian livery, spoke into his wrist comm. "Yes. We're secured here. Tell m'lord. No, he said to wake him. You want to explain why you didn't? Thank you."

The guards did not prod them into the corridor, but waited. The still-unconscious man Bothari had clipped was dragged out. The guards placed Cordelia, arms outstretched to the wall and legs straddled, in a row with Bothari and Droushnakovi. She was dizzy with despair. But Kareen would come to her sometime, even as a prisoner. Must come to her. All she needed was thirty seconds with Kareen, maybe less. *When I see Kareen, you are a dead man, Vordarian. You may walk and talk and give orders, unconscious of your demise for weeks, but I'll seal your fate as surely as you've sealed my son's.*

The reason for the wait materialized at last; Vordarian himself, in green uniform trousers and slippers, barechested, shouldered his way through the doorway. He was followed by Princess Kareen, clutching a dark red velvet robe around her. Cordelia's heart hammered at a doubled rate. *Now?*

"So. The trap worked," Vordarian began complacently, but added a genuinely shocked "Huh!" as Cordelia pushed away from the wall and turned to face him. A hand signal stopped a guard from shoving her back into position. The shock on Vordarian's face gave way to a wolfish grin. "My God, did it work! Excellent!" Kareen, hovering behind him, stared at Cordelia in bewildered astonishment.

MY trap worked, Cordelia thought, stunned with her opportunity. *Watch me. . . .*

"That's the thing, my lord," said the liveried man, not at all happily. "It didn't work. We didn't pick this party up at the outer perimeter of the Residence and clear their way, they just bloody turned up—without triggering anything. That shouldn't have happened. If I hadn't come along looking for Roget, we might not have spotted 'em."

Vordarian shrugged, too delighted by the magnitude of his prey to issue some trifling censure. "Fast-penta that frill," he pointed at Droushnakovi, "and I imagine you'll find out how. She used to work in Residence Security."

Droushnakovi glowered over her shoulder at Princess Kareen in hurt accusation; Kareen unconsciously pulled her robe up more closely about her neck, her dark eyes full of equally hurt question.

"Well," said Vordarian, still smiling at Cordelia, "is my Lord Vorkosigan so thin of troops he sends his wife to do their work? We cannot lose." He smiled at his guards, who smiled back.

Damn, I wish I'd shot this lout in his sleep. "What have you done with my son, Vordarian?"

Vordarian said through his teeth, "An outworlder frill will never gain power on Barrayar by scheming to give a mutant the Imperium. That, I guarantee."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"Is that the official line, now? I don't want power. I just object to idiots having power over me."

Behind Vordarian, Kareen's lips quirked sadly. *Yes, listen to me, Kareen!*

"Where's my son, Vordarian?" Cordelia repeated doggedly.

"He's Emperor Vidal now," Kareen remarked, her glance going back and forth between them, "if he can keep it."

"I will," Vordarian promised. "Aral Vorkosigan has no better a blood-claim than my own. And I will protect where Vorkosigan's party has failed. Protect and preserve the real Barrayar." His head shifted; apparently this assertion was directed over his shoulder to Kareen.

"We have not failed," Cordelia whispered, meeting Kareen's eyes. *Now.* She lifted the shoe from the table, and stretched out her arm with it; Kareen's eyes widened. She darted forward and grabbed it. Cordelia's hand spasmed like a dying runner's giving up the baton in some mortal relay race. Fierce certainty bloomed like fire in her soul. *I have you now, Vordarian.* The sudden movement sent a ripple through the armed guards. Kareen examined the shoe with passionate intensity, turning it in her hands. Vordarian's brows rose in bafflement, then he dismissed Kareen from his attention and turned to his liveried guard commander.

"We'll keep all three of these prisoners here in the Residence. I'll personally attend the fast-penta interrogations. This is a spectacular opportunity—"

Kareen's face, when she lifted it again to Cordelia, was terrible with hope.

Yes, thought Cordelia. You were betrayed. Lied to. Your son lives; you must move and think and feel again, no more the walking numbness of a dead spirit beyond pain. This is no gift I've brought you. It is a curse.

"Kareen," said Cordelia softly, "where is my son?"

"The replicator is on a shelf in the oak wardrobe, in the old emperor's bedchamber," Kareen replied steadily, locking her eyes to Cordelia's. "Where is mine?"

Cordelia's heart melted in gratitude for her curse, live pain. "Safe and well, when I last saw him, as long as this pretender," she jerked her head at Vordarian, "doesn't find out where. Gregor misses you. He sends his love." Her words might have been spikes, pounded into Kareen's body.

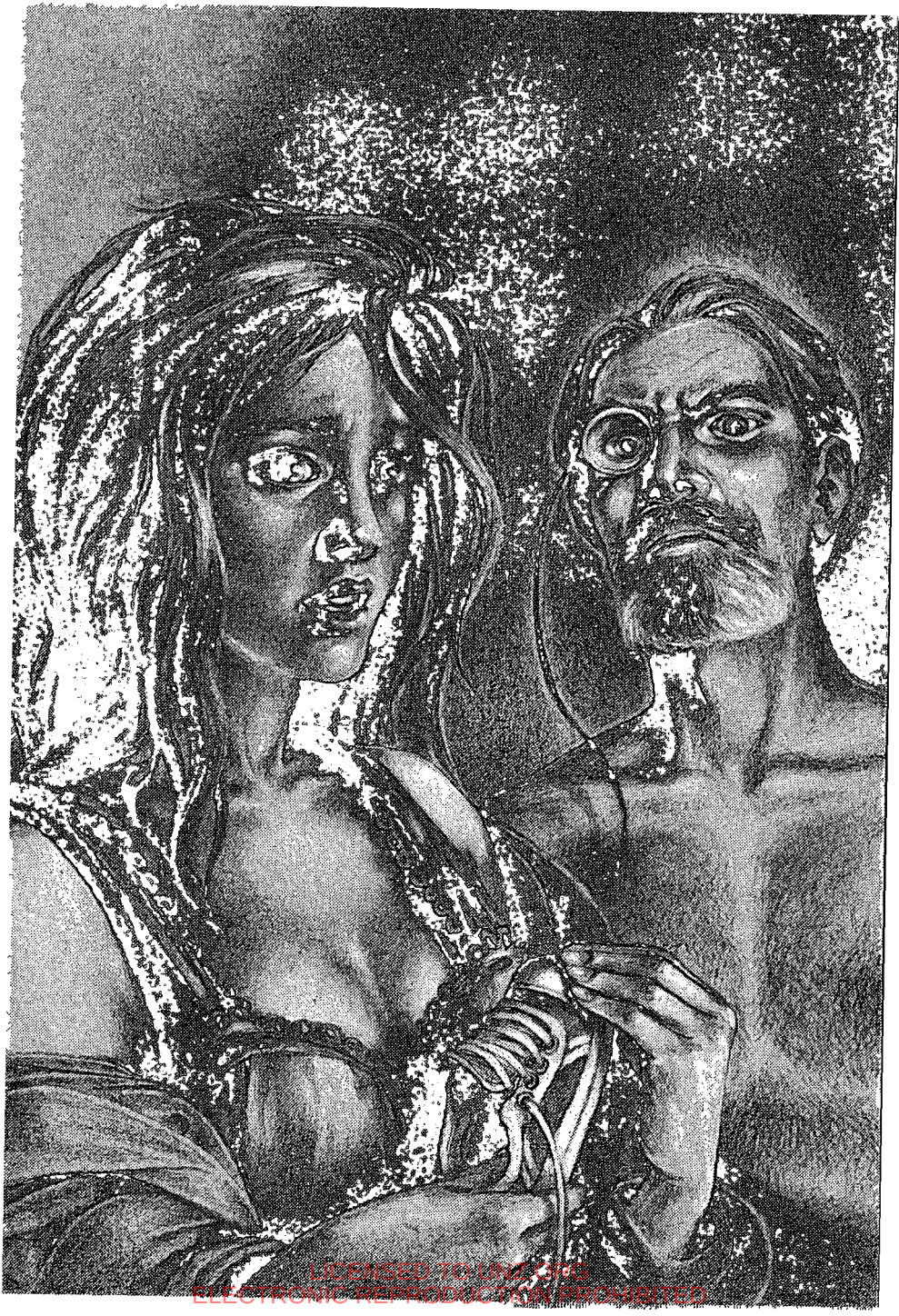
That got Vordarian's attention. "Gregor is at the bottom of a lake, killed in the flyer crash with that traitor Negri," he said roughly. "The most insidious lie is the one you want to hear. Guard yourself, my lady Kareen. I could not save him, but I will avenge him. I promise you that."

Uh-oh. Wait, Kareen. Cordelia bit her lip. *Not here. Too dangerous. Wait your best opportunity. Wait till the bastard's asleep, at least*—but if even a Betan hesitated to shoot her enemy sleeping, how much less a Vor? *She is true Vor. . . .*

An unfriendly smile crinkled Kareen's lips. Her eyes were alight. "This has never been immersed," she said softly.

Cordelia heard the murderous undertones ringing like a bell; Vordarian, ap-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

parently, only heard the breathiness of some girlish grief. He glanced at the shoe, not grasping its message, and shook his head as if to clear it of static. "You'll bear another son someday," he promised her kindly. "Our son."

Wait, wait, wait, Cordelia screamed inside.

"Never," whispered Kareen. She stepped back beside the guard in the doorway, snatched his nerve disruptor from his open holster, aimed it point-blank at Vordarian, and fired.

The startled guard knocked her hand up; the shot went wide, crackling into the ceiling. Vordarian dove behind the table, the only furniture in the room, rolling. His liveried man, in pure spinal reflex, snapped up his nerve disruptor and fired. Kareen's face muscles locked in death-agony as the blue fire washed around her head; her mouth pulled open in a last soundless cry. *Wait*, Cordelia's thought wailed.

Vordarian, utterly horrified, bellowed "No!" scrambled to his feet, and tore a nerve disruptor from the hand of another guard. The liveried man, realizing the enormity of his error, tossed his weapon away as if to divorce himself from his action. Vordarian shot him.

The room tilted around her. Cordelia's hand locked around the hilt of the swordstick and triggered its sheath flying into the head of one guard, then brought the blade smartly down across Vordarian's weapons-wrist. He screamed, and blood and the nerve disruptor flew wide. Droushnakovi was already diving for the first discarded nerve disruptor. Bothari just took his target out with one lethal hand-blow to the neck. Cordelia slammed the door to the corridor shut against the guards surging forward. A stunner charge buzzed into the walls, then three blue bolts in rapid succession from Droushnakovi took out the last of Vordarian's men.

"*Grab* him!" Cordelia yelled at Bothari. Vordarian, shaking, his left hand clamped around his half-severed right wrist, was in poor condition to resist, though he kicked and shouted. His blood ran the color of Kareen's robe. Bothari locked Vordarian's head in a firm grip, nerve disruptor pressed to his skull.

"Out of here," snarled Cordelia, and kicked the door back open. "To the emperor's chamber." *To Miles.* Vordarian's other guards, preparing to fire, held back at the sight of their master.

"Back off!" Bothari roared, and they fell away from the door. Cordelia grabbed Droushnakovi by the arm, and they stepped over Kareen's body. Her ivory limbs lay muddled in the red fabric, abstractly beautiful forms even in death. The women kept Bothari and Vordarian between themselves and Vordarian's troops, and retreated down the corridor.

"Pull that plasma arc out of my holster and start firing," Bothari savagely directed Cordelia. Yes; Bothari had managed to retrieve it in the melee, probably why his body count hadn't been higher.

"You can't set fire to the *Residence*," Drou gasped in horror.

A fortune in antiquities and Barrayaran historical artifacts were housed in this wing alone; no doubt. Cordelia grinned wildly, grabbed the weapon, and fired back down the corridor. Wooden furniture, wooden parquetry,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

and age-dry tapestries roared into flames as the beam's searing fingers touched them.

Burn, you. Burn for Kareen. Fire a death-offering to match her courage and agony, blazing higher and higher—As they reached the door of the old emperor's bedchamber, she fired the hallway in the opposite direction for good measure. *THAT for what you've done to me, and to my boy*—the flames should hold back pursuit for a few minutes. She felt like her body was floating, light as air. *Is this how Bothari feels, when he kills?*

Droushnakovi went for the wall panel to the secret ladder. She was functioning steadily now, as if her hands belonged to a different body than her tear-ravaged face. Cordelia dropped the sword on the bed and raced straight for the huge old carved oak wardrobe that stood against the near wall, and flung its doors wide. Green and amber lights glowed in the dim recesses of the center shelf. *God, don't let it be another decoy. . . .* Cordelia wrapped her arms around the canister and lifted it out into the light. The right weight, this time, heavy with fluids; the right readouts, the right numbers. The right one.

Thank you, Kareen. I didn't mean to kill you. Surely she was mad. She didn't feel anything, no grief or remorse, though her heart was racing and her breath came in gasps. A shocky combat-high, that immortal rush that made men charge machine guns. So this was what the war-addicts came for.

Vordarian was still struggling against Bothari's grip, swearing horribly. "You won't escape!" He stopped bucking to catch Cordelia's eyes. He took a deep breath. "Think, Lady Vorkosigan. You'll never make it. You must have me for a shield, but you can't carry me stunned. Conscious, I'll fight you every meter of the way. My men will be all over you, out there." His head jerked toward the window. "Stun us all and take you prisoner." His voice went persuasive. "Surrender now, and you'll save your lives. That one's life too, if it means so much to you," he nodded to the replicator Cordelia held in her arms. Her steps were heavier than Alys Vorpatril's, now.

"I never gave orders for that fool Vorhalas to kill Vorkosigan's heir," Vordarian continued desperately. Blood leaked rapidly from between his fingers. "It was only his father, with his fatal progressive policies, who threatened Barrayar. Your son might have inherited the Countship from Piotr with my good will. Piotr should never have been divided from his party of true allegiance. It's a crime, what Lord Aral has put Piotr through—"

So. It was you. Even at the very beginning. Blood loss and shock were making a jerky parody of Vordarian's usual smooth delivery of political argument. It was as if he sensed he could talk his way out of retribution, if only he hit on the right key words. Somehow, Cordelia doubted he would. Vordarian was not gaudily evil like Vorrutyer had been, not personally degraded like Serg; yet evil had flowed from him nonetheless, not from his vices, but from his virtues: the courage of his conservative convictions, his passion for Kareen. Cordelia's head ached, vilely.

"We'd never proved you were behind Evon Vorhalas," Cordelia said

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

quietly. "Thank you for the information."

That shut him up, for a moment. His eyes shifted uneasily to the door, soon to burst inward, ignited by the inferno behind it.

"Dead, I'm no use to you as a hostage," he said, drawing himself up in dignity.

"You're no use to me at all, Emperor Vidal," said Cordelia frankly. "There are at least five thousand casualties in this war so far. Now that Kareen is dead, how long will you keep fighting?"

"Forever," he snarled whitely. "I will avenge her—avenge them all—"

Wrong answer, Cordelia thought, with a curious lightheaded sadness. "Bothari." He was at her side instantly. "Pick up that sword." He did so. She set the replicator on the floor and laid her hand briefly atop his, wrapped around the hilt. "Bothari, execute this man for me, please." Her tone sounded weirdly serene in her own ears, as if she'd just asked Bothari to pass the butter. Murder didn't really require hysterics.

"Yes, milady," Bothari intoned, and lifted the blade. His eyes gleamed with joy.

"What?" yelped Vordarian in astonishment. "You're a Betan! You can't do—"

The flashing stroke cut off his words, his head, and his life. It was really extremely neat, despite the last spurts of blood from the stump of his neck. Vorkosigan should have loaned Bothari's services the day they'd executed Carl Vorhalas. All that upper body strength, combined with that extraordinary steel . . . the bemused gyration of her thought snapped back to near-reality as Bothari fell to his knees with the body, dropping the swordstick and clutching his head. He screamed. It was as if Vordarian's death cry had been forced out of Bothari's throat.

She dropped beside him, suddenly afraid again, though she'd been numb to fear, white-out overloaded, ever since Kareen had grabbed for the nerve disruptor and triggered all this chaos. Keyed by similar stimuli, Bothari was having the forbidden flashback, Cordelia guessed, to the mutinous throat-cutting that the Barrayaran high command had decreed he must forget. She cursed herself for not forseeing this possibility. Would it kill him?

"This door is hot as hell," Droushnakovi, white and shaken, reported from beside it. "Milady, we have to get out of here *now*."

Bothari was gasping raggedly, hands still pressed to his head, yet even as she watched his breathing grew marginally less disrupted. She left him to crawl blindly over the floor. She needed something, something moisture-proof . . . . There, at the bottom of the wardrobe, was a sturdy plastic bag containing several pairs of Kareen's shoes, no doubt hastily transported by some maidservant when Vordarian had imperially decreed Kareen move in with him. Cordelia emptied out the shoes, stumbled back around the bed, and collected Vordarian's head from the place it had rolled to a stop. It was heavy, but not so heavy as the uterine replicator. She pulled the drawstrings tight.

"Drou. You're in the best shape. Carry the replicator. Start down. Don't

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

drop it." If she dropped Vordarian, Cordelia decided, it would scarcely do him further harm.

Droushnakovi nodded and grabbed up both the replicator and the abandoned swordstick. Cordelia wasn't sure if she retrieved the latter for its newly acquired historical value, or from some fractured sense of obligation for one of Kou's possessions. Cordelia coaxed Bothari to his feet. Cool air was rushing up out of the panel opening, drawn by the fire beyond the door. It would make a neat flue, till the burning wall crashed in and blocked the entry. Vordarian's people were going to have a very puzzling time, poking through the embers and wondering where they'd gone.

The descent was nightmarish, in the compressed space, with Bothari whimpering below her feet. She could carry the bag neither beside nor in front of her, so had to balance it on one shoulder and go one-handed, palm slapping down the rungs and her wrist aching.

Once on the level, she prodded the weeping Bothari ruthlessly forward, and wouldn't let him stop till they came again to Ezar's cache in the ancient stable cellar.

"Is he all right?" Droushnakovi asked nervously, as Bothari sat down with his head between his knees.

"He has a headache," said Cordelia. "It may take a while to pass off."

Droushnakovi asked even more diffidently, "Are you all right, milady?"

Cordelia couldn't help it; she laughed. She choked down the hysteria as Drou began to look really scared. "No."

CHAPTER NINETEEN

Ezar's cache included a crate of currency, Barrayaran marks of various denominations. It also included a choice of ID's tailored to Drou, not all of which were obsolete. Cordelia put the two together, and sent Drou out to purchase a used ground-car. Cordelia waited by the cache while Bothari slowly uncurled from his tight fetal ball of pain, recovering enough to walk.

Getting back out of Vorbarr Sultana had always been the weak part of her plan, Cordelia felt, perhaps because she'd never really believed they'd get this far. Travel was tightly restricted, as Vordarian sought to keep the city from collapsing under him should its frightened populace attempt to stream away. The monorail required passes and cross-checks. Lightflyers were absolutely forbidden, targets of opportunity for trigger-happy guards. Groundcars had to cross multiple road blocks. Foot travel was too slow for her burdened and exhausted party. There were no good choices.

After an eternity, pale Drou returned, to lead them back through the tunnels and out to an obscure side street. The city was dusted with sooty snow. From the direction of the Residence, a kilometer off, a darker cloud boiled up to mix with the winter-grey sky; the fierce fire was still not under control, apparently. How long would Vordarian's decapitated command structure keep functioning? Had word of his death leaked out yet?

As instructed, Drou had found a very plain and unobtrusive old groundcar, though there had been enough funds to buy the most luxurious new vehicle the city still held. Cordelia wanted to save

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

that reserve for the check points.

But the check points were not as bad as Cordelia had feared. Indeed, the first was empty, its guards pulled back, perhaps, to fight the fire or seal the perimeter of the Residence. The second was crowded with vehicles and impatient drivers. The inspectors were perfunctory and nervous, distracted and half-paralyzed by who-knew-what rumors coming from downtown. A fat wad of currency, handed out under Drou's perfect false ID, disappeared into a guard's pocket. He waved Drou through, driving her "sick uncle" home. Borthari looked sick enough, for sure, huddled under a blanket that also hid the replicator. At the last check-point Drou "repeated" a likely version of a rumor of Vordarian's death, and the worried guard deserted on the spot, shedding his uniform in favor of a civilian overcoat and vanishing down a side street.

They zig-zagged over bad side roads all afternoon to reach Vorinnis's neutral District, where the aged groundcar died of a fractured power-train. They abandoned it and took to the monorail system then, Cordelia driving her exhausted little party on, racing the clock in her head. At midnight, they reported in at the first military installation over the next loyalist border, a supply depot. It took Drou several minutes of argument with the night duty officer to persuade him to 1) identify them, 2) let them in, and 3) let them use the military comm net to call Tanery Base to demand transport. At that point the D.O. abruptly became a lot more efficient. A high-speed air shuttle with a hot pilot was scrambled to pick them up.

Approaching Tanery Base at dawn from the air, Cordelia felt the most unpleasant flash of *déjà vu*. It was so like her first arrival from the mountains, she had the sense of being caught in a time loop. Perhaps she'd died and gone to hell, and her eternal torment would be to repeat the last three weeks' events over and over, endlessly. She shivered.

Droushnakovi watched her with concern. The exhausted Bothari dozed, in the air shuttle's passenger cabin. Illyan's two ImpSec men, identical twins for all Cordelia could tell to Vordarian's that they'd murdered back at the Residence, maintained a nervous silence. Cordelia held the uterine replicator possessively on her lap. The plastic bag sat between her feet. She was irrationally unable to let either item out of her sight, though it was clear Drou would much rather the bag had ridden in the luggage compartment.

The air shuttle touched neatly down on its landing pad, and its engines whined to silence.

"I want Captain Vaagen, and I want him *now*," Cordelia repeated for the fifth time as Illyan's men led them underground into the Security debriefing area.

"Yes, milady. He's on his way," the ImpSec man assured her again. She glowered suspiciously at him.

Cautiously, the ImpSec men relieved them of their personal arsenal. Cordelia didn't blame them; she wouldn't have trusted her wild-looking crew with charged weapons either. Thanks to Ezar's cache the women were not ill-dressed, though there had been nothing in Bothari's size, so he'd retained his smoked and stinking black fatigues. Fortunately the dried blood spatters

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

didn't show much. But all their faces were hollow-eyed, grooved and shadowed with fatigue. Cordelia shivered, Bothari's hands and eyelids twitched, and Droushnakovi had a distressing tendency to start crying, silently, at random moments, stopping as suddenly as she started.

At long last—only minutes, Cordelia told herself firmly—Captain Vaagen appeared, a tech at his side. He wore undress greens, and his steps were quick, up to Vaagen-speed again. The only residue of his injuries seemed to be a black patch over his eye. On him, it looked good, giving him a fine piratical air. Cordelia trusted the patch was only a temporary part of on-going treatment.

"Milady!" He managed a smile, the first to shift those facial muscles in a while, Cordelia sensed. His one eye gleamed triumph. "You got it!"

"I hope so, Captain." She held up the replicator, which she had refused to let the ImpSec men touch. "I hope we're in time. There aren't any red lights yet, but there was a warning beeper. I shut it off, it was driving me crazy."

He looked the device over, checking key readouts. "Good. Good. Nutrient reservoir is very low, but not quite depleted yet. Filters still functioning, uric acid level high but not over tolerance—I think it's all right, milady. Alive, that is. What this interruption has done to my calcification treatments will take more time to determine. We'll be in the infirmary. I should be able to begin servicing it within the hour."

"Do you have everything you need there? Supplies?"

His white teeth flashed. "Lord Vorkosigan had me begin setting up a lab the day after you left. Just in case, he said."

Aral, I love you. "Thank you. Go, go." She surrendered the replicator into Vaagen's hands, and he hurried out with it.

She sat back down like a marionette with the strings cut. Now she could allow herself to feel the full weight of her exhaustion. But she could not stop quite yet. She had one very important debriefing yet to accomplish. And not to these hovering ImpSec twits, who pestered her—she closed her eyes and pointedly ignored them, letting Drou stammer out answers to their foolish questions.

Desire warred with dread. She wanted Aral. She had defied Aral, most openly. Had it touched his honor, scorched his—admittedly, unusually flexible—Barrayaran male ego beyond tolerance? Would she be frozen out of his trust forever? No, that suspicion was surely unjust. But his public credibility among his peers, part of the delicate psychology of power—had she damaged it? Would some damnable unforeseen political consequence rebound out of all this, back on their heads? Did she care? Yes, she decided sadly. It was hell to be so tired, and still care.

"Kou!"

Drou's cry snapped Cordelia's eyes open. Koudelka was limping into the main portal Security debriefing office. Good lord, the man was back in uniform, shaved and sharp. Only the grey rings under his eyes were non-regulation.

Kou and Drou's reunion, Cordelia was delighted to note, was not in the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

least military. The staff soldier was instantly plastered all over with a tall and grubby blonde, exchanging muffled unregulation greetings like *darling, love, thank God, safe, sweet. . . .* The ImpSec men turned away uncomfortably from the blast of naked emotion radiating from their faces. Cordelia basked in it. A far more sensible way to greet a friend than all that moronic saluting.

They parted only to see each other better, still holding hands. "You made it," chortled Droushnakovi. "When — is Lady Vorpatril—?"

"We only made it in about two hours ahead of you," Kou said breathlessly, reoxygenating after a heroic kiss. "Lady Vorpatril and the young lord are bedded down in the infirmary. The doctor says she's suffering mainly from stress and exhaustion. She was incredible. We had a couple of bad moments, getting past Vordarian's Security, but she never cracked. And you—you did it! I passed Vaagen in the corridor, with the replicator—you rescued m'lord's son!"

Droushanakovi's shoulders sagged. "But we lost Princess Kareen."

"Oh." He touched her lips. "Don't tell me—Lord Vorkosigan instructed me to bring you all to him the instant you arrived. Debrief to him before anyone. I'll take you to him now." He waved away the ImpSec men like flies, something Cordelia had been longing to do.

Bothari had to help her rise. She gathered up the yellow plastic bag. She noted ironically that it bore the name and logo of one of the capital's most exclusive women's clothiers. *Kareen encompasses you at last, you bastard.*

"What's that?" asked Kou.

"Yes, Lieutenant," the urgent ImpSec man put in, "please—she's refused to let us examine it in any way. By regulations, we shouldn't let her carry it into the base."

Cordelia pulled open the top of the bag and held it out for Kou's inspection. He peered within.

"*Shit.*" The ImpSec men surged forward as Koudelka jumped back. He waved them down. "I . . . I see," he swallowed. "Yes, Admiral Vorkosigan will certainly want to see *that.*"

"Lieutenant, what should I put on my inventory?" the ImpSec man—whined, Cordelia decided, was what he was doing. "I have to register it, if it's going in."

"Let him cover his ass, Kou," Cordelia sighed.

Kou peeked again, his lips twisting into a very crooked grin. "It's all right. Put it down as a Winterfair gift for Admiral Vorkosigan. From his wife."

"Oh, Kou," Drou held out his sword. "I saved this. But we lost the casing, I'm sorry."

Kou took it, looked at the bag, made the connection, and carried it more carefully. "That's . . . that's all right. Thank you."

"I'll take it back to Siegling's and get a duplicate casing made," Cordelia promised.

The ImpSec men gave way before Admiral Vorkosigan's top aide. Kou led Cordelia, Bothari, and Drou into the base. Cordelia pulled the drawstring tight, and let the bag swing from her hand.

"We're going down to the staff level. The Admiral's been in a sealed

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

meeting for the last hour. Two of Vordarian's top officers came in secretly last night. Negotiating to sell him out. The best hostage-rescue plan hinges on their cooperation."

"Did they know about this yet?" Cordelia held up the bag.

"I don't think so, milady. You've just changed everything." His grin grew feral, and his uneven stride lengthened.

"I expect that raid is still going to be required," Cordelia sighed. "Even in collapse, Vordarian's side is still dangerous. Maybe more dangerous, in their desperation." She thought of that downtown Vorbarr Sultana hotel, where Bothari's baby girl Elena was, as far as she knew, still housed. Lesser hostages. Could she persuade Aral to apportion a few more resources for lesser hostages? Alas, she had probably not put all the soldiers out of work even yet. *I tried. God, I tried.*

They went down, and down, to the nerve center of Tanery base. They came to a highly-secured conference chamber; a lethally-armed squad stood ramrod-guard outside it. Koudelka wafted them past. The doors slid aside, and closed again behind them.

Cordelia took in the tableau, that paused to look back up at her from around the polished table. Aral was in the center, of course. Illyan and Count Piotr flanked him on either side. Prime Minister Vortala was there, and Kanzian, and some other senior staffers all in formal dress greens. The two double-traitors sat across, with their aides. Clouds of witnesses. She wanted to be alone with Aral, be rid of the whole bloody mob of them. *Soon.*

Aral's eyes locked to hers in silent agony. His lips curled in an utterly ironic smile. That was all; and yet her stomach warmed with confidence again, sure of him. No frost. It was going to be all right. They were in step again, and a torrent of words and hard embraces could not have communicated it any better. Embraces would come, though, the grey eyes promised. Her own lips curved up for the first time since—when?

Count Piotr's hand slapped down hard upon the table. "Good God, woman, where have you been?" he cried furiously.

A morbid lunacy overtook her. She smiled fiercely at him, and held up the bag. "Shopping."

For a second, the old man nearly believed her. Conflicting expressions whiplashed over his face, astonishment, disbelief, then anger as it penetrated that he was being mocked.

"Want to see what I bought?" Cordelia continued, still floating. She yanked the bag's top open, and rolled Vordarian's head out across the table. Fortunately, it had ceased leaking some hours back. It stopped face up before him, lips grinning, drying eyes staring.

Piotr's mouth fell open. Kanzian jumped, the staffers swore, and one of Vordarian's traitors actually fell out of his chair, recoiling. Vortala pursed his lips and raised his brows. Koudelka, grimly proud of his key role in stage-managing this historic moment in one-upsmanship, laid the swordstick on the table as further evidence. Illyan puffed, and grinned triumphantly through his shock.

Aral was perfect. His eyes widened

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

only briefly, then he rested his chin on his hands and gazed over his father's shoulder with an expression of cool interest. "But of course," he breathed. "Every Vor lady goes to the capital to shop."

"I paid too much for it," Cordelia confessed.

"That, too, is traditional." A sardonic smile quirked his lips.

"Kareen is dead. Shot in the melee. I couldn't save her."

He opened his hand, as if to let the nascent black humor fall through his fingers. "I see." He raised his eyes again to hers, as if asking *Are you all right?*, and apparently finding the answer, *No.*

"Gentlemen. If you will be pleased to excuse yourselves for a few minutes. I wish to be alone with my wife."

In the shuffle of the men rising to their feet, Cordelia caught a mutter, "Brave man. . . ."

She nailed Vordarian's men by eye, as they backed from the table. "Officers. I recommend that when this conference resumes, you surrender unconditionally upon Lord Vorkosigan's mercy. He may still have some." *I certainly don't,* was the unspoken cap to that. "I'm tired of your stupid war. End it."

Piotr edged past her. She smiled bitterly at him. He grimaced uneasily back. "It appears I underestimated you," he murmured.

"Don't you ever . . . cross me again. And stay away from my son."

A look from Vorkosigan held back her outpouring of rage, quivering on the lip of her cup. She and Piotr exchanged wary nods, like the vestigial bows of two duelists.

"Kou," said Vorkosigan, staring bemusedly at the grisly object lying by his elbow. "Will you please arrange for this thing to be removed to the base morgue. I don't fancy it as a table decoration. It will have to be stored till it can be buried with the rest of him. Wherever that may be."

"Sure you don't want to leave it there to inspire Vordarian's staffers to come to terms?" said Kou.

"No," said Vorkosigan firmly. "It's had a sufficiently salutary effect already."

Gingerly, Kou took the bag from Cordelia, opened it, and used it to capture Vordarian's head without actually touching it.

Aral's eye took in her weary team, Droushnakovi's grief, Bothari's compulsive twitching. "Drou. Sergeant. You are dismissed to wash and eat. Report back to me in my quarters after we finish here."

Droushnakovi nodded, and the sergeant saluted, and they followed Koudelka out.

Cordelia fell into Aral's arms as the door sighed shut, into his lap, catching him as he rose for her. They both landed with enough force to threaten the balance of the chair. They embraced each other so tightly, they had to back off to manage to kiss.

"Don't you ever," he husked, "pull a stunt like that again."

"Don't you ever let it become necessary, again."

"Deal."

He held her face away from his, between his hands, his eyes devouring her. "I was so afraid for you, I forgot

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

to be afraid for your enemies. I should have remembered. Dear Captain."

"I couldn't have done a thing, alone. Drou was my eyes, Bothari my right arm, Koudelka our feet. You must forgive Kou for going AWOL. We sort of kidnapped him."

"So I heard."

"Did he tell you about your cousin Padma?"

"Yes," a grieved sigh. He stared back through time. "Padma and I were the only survivors of Mad Yuri's massacre of Prince Xav's descendants, that day. I was eleven. Padma was one, a baby . . . I always thought of him as the baby, ever after. Tried to watch out for him. . . . Now I'm the only one left. Yuri's work is almost done."

"Bothari's Elena. She must be rescued. She's a lot more important than that barn full of counts at the Residence."

"We're working on that right now," he promised. "Top priority, now that you've removed Emperor Vidal from consideration." He paused, smiling slowly. "I fear you've shocked my Barrayarans, love."

"Why? Did they think they had a monopoly on savagery? Those were Vordarian's last words. 'You're a Betan. You can't do.' "

"Do what?"

"*This*, I suppose he would have said. If he'd had the chance."

"A lurid trophy, to carry on the monorail. Suppose someone had asked you to open your bag?"

"I would have."

"Are you . . . quite all right, love?" His mouth was serious, under his smile.

"Meaning, have I lost my grip? Yes, a little. More than a little." Her hands still shook, as they had for a day, a continuous trembling that did not pass off. "It seemed . . . necessary, to bring Vordarian's head along. I hadn't actually thought about mounting it on the wall of Vorkosigan House along with your father's hunting trophies, though it's an idea. I don't think I consciously realized why I was hanging on to it till I walked into this room. If I'd staggered in here empty-handed, and told all those men I'd killed Vordarian, and undeclared their little war, who'd have believed me? Besides you."

"Illyan, perhaps. He's seen you in action before. The others . . . you're quite right."

"I think I also had some idea stuck in my mind from ancient history. Didn't they use to publicly display the bodies of slain rulers, to scotch pretenders? It seemed appropriate. Though Vordarian was almost a side-issue, from my point of view."

"Your ImpSec escort reported to me you'd recovered the replicator. Was it still working?"

"Vaagen has it now, checking it. Miles is alive. Damage unknown. Oh. It seems Vordarian had some hand in setting up Evon Vorhalas. Not directly, through some agent."

"Illyan suspected it." His arms tightened around her.

"About Bothari," she said. "He's not in good shape. Way overstressed. He needs real treatment, medical, not political. That memory wipe was a horror show."

"At the time, it saved his life. My compromise with Ezar. I had no power then. I can do better now."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"You'd better. He's fixated on me like a dog. His words. And I've used him like one. I owe him . . . everything. But he scares me. Why *me?*"

Vorkosigan looked very thoughtful. "Bothari . . . does not have a good sense of self. No strong center. When I first met him, at his most ill, his personality was close to separating into multiples. If he were better educated, not so damaged, he would have made an ideal spy, a deep-penetration mole. He's a chameleon. A mirror. He becomes whatever is required of him. Not a conscious process, I don't think. Piotr expects a loyal retainer, and Bothari plays the part, deadpan as you please. Vorrutyer wanted a monster, and Bothari became his torturer. And victim. I demanded a good soldier, and he became one for me. You . . ." his voice softened, "you are the only person I know who looks at Bothari and sees a hero. So he becomes one for you. He clings to you because you create him a greater man than he ever dreamed of being."

"Aral, that's crazed."

"Ah?" He nuzzled her hair. "But he's not the only man you have that peculiar effect upon. Dear Captain."

"I'm afraid I'm not in much better shape than Bothari. I botched it, and Kareen died. Who will tell Gregor? If it weren't for Miles, I'd quit. You keep Piotr off me, or I swear, next time I'll try and take him apart." She was shaking again.

"Sh." He rocked her, a little. "I think you can at least leave the mopping up to me, eh? Will you trust me again? We'll make something of these sacrifices. Not vain."

"I feel dirty. I feel sick."

"Yes. Most sane people do, coming in off a combat mission. It's a very familiar state of mind." He paused. "But if a Betan can become so Barrayaran, maybe it's not so impossible for Barrayarans to become a little more Betan. Change is possible."

"Change is inevitable," she asserted. "But you can't manage it Ezar's way. This isn't Ezar's era any more. You have to find your own way. Remake this world into one Miles can survive in. And Elena. And Ivan. And Gregor."

"As you will, milady."

On the third day after Vordarian's death, the capital fell to loyal Imperial troops; if not without a shot being fired, at least not nearly so bloodily as Cordelia had feared. Only two pockets of resistance, at ImpSec and at the Residence itself, had to be cleared out by ground troops. The downtown hotel, with its hostages, was surrendered intact by its garrison, after hours of intense covert negotiations. Piotr gave Bothari a one-day leave to personally retrieve his child and her fosterer, and escort them home. Cordelia slept through the night for the first time since her return.

Evon Vorhalas had been commanding ground troops for Vordarian in the capital, in charge of the last defense of the space communications center in the military headquarters complex. He died in the final flurry of fighting, shot by his own men when he spurned an offer of amnesty in return for their surrender. In a way, Cordelia was relieved. The traditional punishment for treason upon the part of a Vor lord was public exposure and death by starvation. The late

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Emperor Ezar had not hesitated to maintain the gruesome tradition. Cordelia could only pray that Gregor's reign would see the custom end.

Without Vordarian to hold it together, his rebel coalition shattered rapidly into disparate factions. An extreme conservative Vor lord in the city of Federstok raised his standard and declared himself emperor, succeeding Vordarian; his pretendership lasted somewhat less than thirty hours. In an eastern coastal district belonging to one of Vordarian's allies, the count suicided upon capture. An anti-Vor group declared an independent republic in the chaos. The new count, an infantry colonel from a collateral family line who had never anticipated such honors falling upon him, took instant and effective exception to this violent swing to the over-progressive. Vorkosigan left it to him and his district militia, reserving Imperial troops for "non-district-internal matters."

"You can't go halfway and stop," Piotr muttered forebodingly, at this delicacy.

"One step at a time," Vorkosigan returned grimly, "I can walk around the world. Watch me."

On the fifth day, Gregor was returned to the capital. Vorkosigan and Cordelia together undertook to tell him of the death of Kareen. He cried in bewilderment. When he quieted, he was taken for a ride in a groundcar with a transparent force-screen, reviewing some troops; in fact, the troops were reviewing him, that he might be seen to be alive, finally dispelling Vordarian's rumors of his death. Cordelia rode with him. His silent shockiness hurt her to the heart, but it was better from her point of view than parading him first and then telling him. If she'd had to endure his repeated queries of when he would see his mother again, all during the ride, she would have broken down herself.

The funeral for Kareen was public though much less elaborate than it would have been in less chaotic circumstances. Gregor was required to light an offering pile for the second time in a year. Vorkosigan asked Cordelia to guide Gregor's hand with the torch. This part of the funeral ceremony seemed almost redundant, after what she'd done to the Residence. Cordelia added a thick lock of her own hair to the pile. Gregor clung close to her.

"Are they going to kill me too?" he whispered to her. He didn't sound frightened, just morbidly curious. Father, grandfather, mother, all gone in a year; no wonder he felt targeted, confused though his understanding of death was at his age.

"No," she said firmly. Her arm tightened around his shoulders. "I won't let them." God help her, this baseless assurance actually seemed to console him.

I'll look after your boy, Kareen, Cordelia thought as the flames rosé up. The oath was more costly than any gift being burned, for it bound her life unbreakably to Barrayar. But the heat on her face eased the pain in her head, a little.

Cordelia's own soul felt like an exhausted snail, shelled in a glassy numbness. She crept like an automaton through the rest of the ceremony, though there were flashes when her surround-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ings made no sense at all. The assorted Barrayaran Vor reacted to her with a frozen, deep formality. *They doubtless figure me for crazy-dangerous, a madwoman let out of the attic by overindulgent relations.* It finally dawned on her that their exaggerated courtesies signified *respect.*

It made her furious. All Kareen's courage of endurance had bought her nothing, Lady Vorpatril's brave and bloody birth-giving was taken for granted, but whack off some idiot's head and you were really somebody, by God—!

It took Aral an hour, when they returned to his quarters, to calm her down, and then she had a crying jag. He stuck it out.

"Are you going to use this?" she asked him, when sheer weariness returned her to a semblance of coherence. "This, this . . . amazing new *status* of mine?" How she loathed the word, acid in her mouth.

"I'll use anything," he vowed quietly, "if it will help me put Gregor on the throne in fifteen years a sane and competent man, heading a stable government. Use you, me, whatever it takes. To pay this much, then fail, would not be tolerable."

She sighed, and put her hand in his. "In case of accident, donate my remaining body parts, too. It's the Betan way. Waste not."

His lip curled up helplessly. Face to face, they rested their foreheads together for a moment, bracing each other. "Want not."

Her silent promise to Kareen was made official policy when she and Aral, as a couple, were officially appointed Gregor's guardians by the Council of Counts. This was legally distinct somehow from Aral's guardianship of the Imperium as Regent. Vortala took time to lecture her and make it clear her new duties involved no political powers. She did have economic functions, including trusteeship of certain Vorbarra holdings that were separate from Imperial properties, appending strictly to Gregor's title as Count Vorbarra. And by Aral's delegation, she was given oversight of the emperor's household. And education.

"But Aral," said Cordelia, stunned. "Vortala emphasized I was to have no power."

"Vortala . . . is not all-wise. Let's just say, he has a little trouble recognizing as such some forms of power which are not synonymous with force. Your window of opportunity is narrow, though, at age twelve Gregor will enter a pre-Academy preparatory school.

"But do they realize . . . ?"

"I do. And you do. It's enough."

CHAPTER TWENTY

One of Cordelia's first orders was to assign Droushnakovi back to Gregor's person, for his emotional continuity. This did not mean giving up the girl's company, a comfort to which Cordelia had grown deeply accustomed, because upon Illyan's renewed insistence Aral finally took up living quarters in the Imperial Residence. It eased Cordelia's heart, when Drou and Kou were wed a month after Winterfair.

Cordelia offered herself as a go-between for the two families; for some reason, Kou and Drou both turned the offer down, hastily, though with pro-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

fuse thanks. Given the bewildering pitfalls of Barrayaran social custom, Cordelia was just as happy to leave it to the experienced elderly lady the couple did contract.

Alys Vorpatril was drawn off her embittered mourning for Padma and her planning of Ivan's life down to the last detail, when she was given a look at a picture of the wedding dress Drou was drooling over.

"No, no, no!" she cried, recoiling. "All that lace—you would look as furry as a big white bear. Silk, dear, long falls of silk is what you need—" and she was off. Motherless, sisterless Drou could scarcely have found a more knowledgeable bridal consultant. Lady Vorpatril ended by making the dress one of her several presents, to be sure of its aesthetic perfection, along with a "little holiday cottage" which turned out to be a substantial house on the eastern seashore. Come summer, Drou's beach dream would come true. Cordelia grinned, and purchased the girl a nightgown and robe with enough tiers of lace layered on them to satiate the most frill-starved soul.

Aral lent the hall: the Imperial Residence's Red Room and adjacent ballroom, the one with the beautiful marquetry floor, which to Cordelia's immense relief had escaped the fire. In theory, this magnificent gesture was required to ease Illyan's security headaches, as Cordelia and Aral were to stand among the principal witnesses. Personally, Cordelia thought converting ImpSec into wedding caterers a promising turn of events.

Aral looked over the guest list and smiled. "Do you realize," he said to Cordelia, "every class is represented? A year ago this event, here, would not have been possible. The grocer's son and the non-com's daughter. They bought it with blood, but maybe next year it can be bought with peaceful achievement. Medicine, education, engineering, entrepreneurship—shall we have a party for librarians?"

"Won't those terrible Vorish crones all Piotr's friends are married to complain about social overprogressiveness?"

"With Alys Vorpatril behind this? They wouldn't dare."

The affair grew from there. By a week in advance Kou and Drou were considering eloping out of sheer panic, having lost all control of everything whatsoever to their eager helpers. But the Imperial Residence's staff brought it all together with practiced ease. The senior housewoman flew about, chortling, "And here I was afraid we weren't going to have anything to do, once the Admiral moved in, but those dreadful boring general staff dinners."

The day and hour came at last. A large circle made of colored groats was laid out on the floor of the Red Room, encompassed by a star with a variable number of points, one for each parent or principal witness to stand at: in this case, four. In Barrayaran custom a couple married themselves, speaking their vows within the circle, requiring neither priest nor magistrate. Practically, a coach, called appropriately enough the Coach, stood outside the circle and read the script for the faint-hearted or faint-headed to repeat. This dispensed with the need for higher neural functions such as learning and memory on the part

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

of the stressed couple. Lost motor coordination was supplied by a friend each, who steered them to the circle. It was all very practical, Cordelia decided, as well as splendid.

With a grin and a flourish Aral placed her at her assigned star point, as if setting out a bouquet, and took his own place. Lady Vorpatril had insisted on a new gown for Cordelia, a sweeping length of blue and white with red floral accents, color-coordinated with Aral's ultra-formal parade red-and-blues. Drou's proud and nervous father also wore his red-and-blues and held down his point.

Sergeant Droushnakovi was a shorter, slighter man than Cordelia had expected. Either Drou's mother's genes, better nutrition, or both, had shot all his children up so that they were taller than himself. All three brothers, from the captain to the corporal, had been broken loose from their military assignments to attend, and stood now in the big outer circle of other witnesses along with Kou's excited younger sister. Kou's mother stood on the star's last point, crying and smiling, in a blue dress so color-perfect Cordelia decided Alys Vorpatril must have somehow gotten to her, too.

Koudelka marched in first, propped by his stick with its new cover and Sergeant Bothari. Sergeant Bothari wore the most glittery version of Piotr's brown and silver livery, and whispered helpful, horribly suggestive advice like "If you feel really nauseous, Lieutenant, put your head down." The very thought turned Kou's face greener, an extraordinary color-contrast with his red-and-blues that Lady Vorpatril would no doubt have disapproved.

Heads turned. *Oh, my.* Alys Vorpatril had been absolutely right about Drou's gown. She swept in, as stunningly graceful as a sailing ship, a tall clean perfection of form and function, ivory silk, gold hair, blue eyes, white, blue, and red flowers, so that when she stepped up beside Kou one suddenly realized how tall he must be. Alys Vorpatril, in silver-grey, released Drou at the circle's edge with a gesture like some hunting goddess releasing a white falcon, to soar and settle on Kou's outstretched arm.

Kou and Drou made it through their oaths without stammering or passing out, and managed to conceal their mutual embarrassment at the public declaration of their despised first names, Clement and Ludmilla.

("My brothers used to call me Lud," Drou had confided to Cordelia during the practice yesterday. "Rhymes with mud. Also thud, blood, crud, dud, and cud."

"You'll always be Drou to me," Kou had promised.)

As senior witness Aral then broke the circle of groats with a sweep of one booted foot and let them out, and the music, dancing, eating and drinking began.

The buffet was incredible, the music live, and the drinking . . . traditional. After the first formal glass of the good wine Piotr'd sent on, Cordelia drifted up to Kou and murmured a few words about Betan research on the detrimental effects of ethanol on sexual function, after which he switched to water.

"Cruel woman," Aral whispered in her ear, laughing.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"Not to Drou, I'm not," she murmured back.

She was formally introduced to the brothers, now brothers-in-law, who regarded her with that awed respect that made her teeth grind. Though her jaw eased a bit when a rhyming brother was waved to silence by Dad to make room for some comment by the bride on the topic of hand-weapons. "Quiet, Jos," Sergeant Droushnakovi told his son. "You've never handled a nerve disruptor in combat." Drou blinked, then smiled, a gleam in her eye.

Cordelia seized a moment with Bothari, whom she saw all too seldom now that Aral had split his household from Piotr's.

"How is Elena doing, now she's back home? Has Mistress Hysopi recovered from it all yet?"

"They're well, milady," Bothari ducked his head, and almost-smiled. "I visited about five days ago, when Count Piotr went down to check on his horses. Elena, um, creeps. Put her down and look away a minute, you look back and she's moved . . ." he frowned. "I hope Carla Hysopi stays alert."

"She saw Elena safely through Vordarian's war, I suspect she'll handle crawling with equal ease. Courageous woman. She should be in line for some of those medals they're handing out."

Bothari's brow wrinkled. "Don't know they'd mean much to her."

"Mm. She does understand she can call on me for anything she needs, I trust. Any time."

"Yes, milady. But we're doing all right for the moment." A flash of pride, there, in that statement of sufficiency. "It's very quiet down at Vorkosigan Surleau, in the winter. Clean. A right and proper place for a baby." *Not like the place I grew up in*, Cordelia could almost hear him add. "I mean her to have everything right and proper. Even her Da."

"How are you doing, yourself?"

"The new med is better. Anyway, my head doesn't feel like it's stuffed with fog anymore. And I sleep at night. Besides that I can't tell what it's doing."

Its job, apparently: he seemed relaxed and calm, almost free of that sinister edginess. Though he was still the first person in the room to look over to the buffet and ask, "Is *he* supposed to be up?"

Gregor, in pajamas, was creeping along the edge of the culinary array, trying to look invisible and nail down a few goodies before he was spotted and taken away again. Cordelia got to him first, before he was either stepped on by an unwary guest, or recaptured by Security forces in the persons of the breathless maidservant and terrified bodyguard who were supposed to be filling in for Drou. They were followed up by a paper-white Simon Illyan. Fortunately for Illyan's heart, Gregor had apparently only been formally missing for about sixty seconds. Gregor shrank into her skirts as the hyperventilating adults loomed over him.

Drou, who had noticed Illyan touch his comm, turn pale, and start to move, checked in by sheer force of habit. "What's the matter?"

"How'd he get away?" snarled Illyan to Gregor's keepers, who stammered out something inaudible about *thought he was asleep* and *never took*

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

my eyes off.

"He's not away," Cordelia put in tartly. "This is his home. He ought to be at least able to walk about inside, or why do you keep all those bloody useless guards on the walls out there?"

"Droushie, can't I come to your party?" Gregor asked plaintively, casting around desperately for an authority to outrank Illyan.

Drou looked at Illyan, who looked disapproving. Cordelia broke the deadlock without hesitation. "Yes, you can."

So, under Cordelia's supervision, the Emperor danced with the bride, ate three cream cakes, and was carried away to bed satisfied. Fifteen minutes was all he'd wanted, poor kid.

The party rolled on, elated. "Dance, milady?" Aral inquired hopefully at her elbow.

Dare she try it? They were playing the restrained rhythms of the mirror-dance—surely she couldn't go too wrong. She nodded, and Aral drained his glass and led her on to the polished marquetry. Step, slide, gesture: concentrating, she made an interesting and unexpected discovery. Either partner could lead, and if the dancers were alert and sharp, the watchers couldn't tell the difference. She tried some dips and slides of her own, and Aral followed smoothly. Back and forth the lead passed like a ball between them, the game growing ever more absorbing, until they ran out of music and breath.

The last snows of winter were melting from the streets of Vorbarr Sultana when Captain Vaagen called Cordelia from ImpMil.

"It's time, milady. I've done all I can do in vitro. The placenta is ten months old and clearly senescing. The machine can't be boosted any more to compensate."

"When, then?"

"Tomorrow would be good."

She barely slept that night. They all trooped down to the Imperial Military Hospital the next morning—Aral, Cordelia, Count Piotr flanked by Bothari. Cordelia was not at all sure she wanted Piotr present, but until the old man did them all the convenience of dropping dead, she was stuck with him. Maybe one more appeal to reason, one more presentation of the facts, one more try, would do the trick. Their unresolved antagonism grieved Aral; at least let the onus for fueling it fall on Piotr, not herself. *Do your worst, old man. You have no future except through me. My son will light your offering pyre.* She was glad to see Bothari again, though.

Vaagen's new laboratory was an entire floor in the most up-to-date building in the complex. Cordelia'd had him moved from his old lab on account of ghosts, having come in for one of her frequent visits soon after their return to Vorbarr Sultana to find him in a state of near-paralysis, unable to work. Every time he entered the room, he'd said, Dr. Henri's violent and senseless death replayed in his memory. He could not step on the floor near the place where Henri's body had fallen, but had to walk wide around; little noises made him jump and twitch. "I am a man of reason," he'd said hoarsely. "This superstitious nonsense means nothing to me." So Cordelia had helped him burn a private offering to Henri in a brazier

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

on the lab floor, and disguised the move as a promotion.

The new lab was bright and spacious and free of revenant spirits. Cordelia found a mob of men waiting when Vaagen ushered her in; researchers assigned to Vaagen to explore replicator technology, interested civilian obstetricians including Dr. Ritter, Miles's own pediatrician-to-be and his consulting surgeon. The changing of the guard. Mere parents needed determination to elbow their way in.

Vaagen bustled about, happily important. He still wore his eyepatch, but promised Cordelia he would take the time for the last round of surgery to restore his vision very soon now. A tech trundled out the uterine replicator and Vaagen paused, as if trying to figure out how to put the proper drama and ceremony into what Cordelia knew for a very simple event. He settled on turning it into a technical lecture for his colleagues, detailing the composition of the hormone solutions as he injected them into the appropriate feed-lines, interpreting readouts, describing the placental separation going on within the replicator, the similarities and differences between replicator and body births. There were several differences Vaagen didn't mention. *Alys Vorpatril should see this*, Cordelia thought.

Vaagen looked up to see her watching him, paused self-consciously, and smiled. "Lady Vorkosigan." He gestured to the replicator's latch-seals. "Would you care to do the honors?"

She reached, hesitated, and looked around for Aral. There he was, solemn and attentive at the edge of the crowd. "Aral?"

He strode forward. "Are you sure?"

"If you can open a picnic cooler, you can do this." They each took a latch and raised them in unison, breaking the sterile seal, and lifted the top off. Dr. Ritter moved in with a vibra-scalpel, cutting through the thick felt mat of nutrient tubing with a touch so delicate the silvery amniotic sac beneath was unscored, then cut Miles free of his last bit of biological packaging, clearing his mouth and nose of fluids before his first surprised inhalation. Aral's arm, around her, tightened so hard it hurt. A muffled laugh, no more than a breath, broke from his lips; he swallowed and blinked to bring his features, suffused with elation and pain, back under strict control.

Happy birthday, thought Cordelia. *Good color . . .*

Unfortunately, that was about all that was really good. The contrast with baby Ivan was overwhelming. Despite the extra weeks of gestation, ten months to Ivan's nine-and-a-half, Miles was barely half Ivan's size at birth, and far more wizened and wrinkled. His spine was noticably deformed, and his legs were drawn up and locked in a tight bend. He was definitely a male heir, though, no question about that. His first cry was thin, weak, nothing at all like Ivan's angry, hungry bellow. Behind her, she heard Piotr hiss with disappointment.

"Has he been getting enough nutrition?" she asked Vaagen. It was hard to keep the accusation out of her tone.

Vaagen shrugged helplessly. "All he would absorb."

The pediatrician and his colleague laid Miles out under a warming light, and began their examination, Cordelia

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

and Aral on either side.

"This bend will straighten out on its own, milady," the pediatrician pointed. "But the lower spine should have surgical correction as early as possible. You were right, Vaagen, the treatment to optimize skull development also fused the hip sockets. That's why the legs are locked in that strange position, m'lord. He'll require surgery to crack those bones loose and turn them around before he can start to crawl or walk. I don't recommend that in the first year, on top of the spinal work, let him gain strength and weight first—"

The surgeon, testing the infant's arms, swore suddenly and snatched up his diagnostic viewer. Miles mewed. Aral's hand clenched, by his trouser seam. Cordelia's stomach sank. "Hell!" said the surgeon. "His humerus just snapped. You're right, Vaagen, the bones are abnormally brittle."

"At least he has bones," sighed Vaagen. "He almost didn't, at one point."

"Be careful," said the surgeon, "especially of the head and spine. If the rest are as bad as the long bones, we're going to have to come up with some kind of reinforcement. . . ."

Piotr stamped toward the door. Aral glanced up, his lips thinning to a frown, and excused himself to follow. Cordelia was torn, but once observation assured her that the bone-setting was underway and the doctors' new caution would protect Miles from further damage, she left their ingenious heads bent over him and followed.

In the corridor, Piotr was stalking up and down. Aral stood at parade rest, unmoved and unmoving. Bothari was a silent witness in the background.

Piotr turned and saw her. "You! You've strung me along. This is what you call 'great repairs'? Gah!"

"They are great repairs. Miles is unquestionably much better than he was. Nobody promised perfection."

"You lied. Vaagen lied."

"We did not," denied Cordelia. "I tried to give you accurate summaries of Vaagen's experiments all the way along. What he's delivered is about what his reports led us to expect. Check your ears."

"I see what you're trying, and it won't work. I've just told him," he pointed at Aral, "this is where I stop. I don't want to see that mutant again. Ever. While it lives, *if* it lives, and it looks pretty damned sickly to me, don't bring it around my door. As God is my judge, woman, you won't make a fool of me."

"That would be redundant," snapped Cordelia.

Piotr's lips curled in a silent snarl. Cheated of a cooperative target, he turned on Aral. "And you, you spineless, skirt-smothered—if your elder brother had lived—" Piotr's mouth clamped shut abruptly, too late.

Aral's face drained to a grey hue Cordelia had seen but twice before; both times he'd been a breath and a chance away from committing murder. Piotr had joked about Aral's famous rages. Only now did Cordelia realize Piotr, though he may have witnessed his son in irritation, had never seen the real thing. Piotr seemed to realize it too, dimly. His brows lowered; he stared, off-balanced.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Aral's hands locked to each other, behind his back. Cordelia could see them shake, white-knuckled. His chin lifted, and he spoke in a whisper.

"If my brother had lived, he would have been perfect. You thought so; I thought so; Emperor Yuri thought so, too. So ever after you've had to make do with the leftovers from that bloody banquet, the son Mad Yuri's death squad overlooked. We Vorkosigans, we can make do." His voice fell still further. "But *my* firstborn will live. I will not fail him."

The icy statement was a near-lethal cut across the belly, as fine a slash as Bothari could have delivered with Koudelka's swordstick, and very accurately placed. Truly, Piotr should not have lowered the tone of this discussion. The breath huffed from him in disbelief and pain.

Aral's expression grew inward. "I will not fail him *again*," he corrected himself lowly. "A second chance you were never given, sir." Behind his back his hands unclenched. A small jerk of his head dismissed Piotr and all Piotr might say.

Blocked twice, visibly suffering from his profound misstep, Piotr looked around for an opportunity to vent his frustration. His eye fell on Bothari, watching blank-faced.

"And you. Your hand was in this from beginning to end. Did my son place you as a spy in my household? Where do your loyalties lie? Do you obey me, or him?"

An odd gleam flared in Bothari's eye. He tilted his head toward Cordelia. "Her."

Piotr was so taken aback, it took him several seconds to regain his speech. "Fine," he sputtered at last. "She can have you. I don't want to see your ugly face again. Don't come back to Vorkosigan House. Esterhazy will deliver your things before nightfall."

He wheeled and marched away. His grand exit, already weak, was spoiled when he looked back over his shoulder before he rounded the corner.

Aral vented a very weary sigh.

"Do you think he means it this time?" Cordelia asked. "All that never-ever stuff?"

"Government concerns will require us to communicate. He knows that. Let him go home and listen to the silence for a bit. Then we'll see." He smiled bleakly. "While we live, we cannot disengage."

She thought of the child whose blood now bound them, her to Aral, Aral to Piotr, and Piotr to herself. "So it seems." She looked an apology to Bothari. "I'm sorry, Sergeant. I didn't know Piotr could fire an oath-sworn Armsman."

"Well, technically, he can't," Aral explained. "Bothari was just reassigned to another branch of the household. You."

"Oh." *Just what I always wanted, my very own monster. What am I supposed to do, keep him in my closet?* She rubbed the bridge of her nose, then regarded her hand. The hand that had encompassed Bothari's on the swordstick. So. And so. "Lord Miles will need a bodyguard, won't he?"

Aral tilted his head in interest. "Indeed."

Bothari looked suddenly so intently hopeful, it made Cordelia catch her

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

breath. "A bodyguard," he said, "and back-up. To keep the raff off. Nobody could give him a hard time if . . . let me help, milady."

Let me help. Rhymes with *I love you*, right? "It would be . . ." *impossible, crazy, dangerous, irresponsible*, "my pleasure, Sergeant."

His face lit like a torch. "Can I start now?"

"Why not?"

"I'll wait for you in there, then," he nodded toward Vaagen's lab. He slipped back through the door. Cordelia could just picture him, leaning watchfully against the wall—she trusted that malevolent presence wouldn't make the doctors so nervous they would drop their fragile charge.

Aral blew out his breath, and took her in his arms. "Do you Betans have any nursery tales about the witch's name-day gifts?"

"The good and bad fairies seem to all be out in force for this one, don't they?" She leaned against the scratchy fabric of his uniformed shoulder. "I don't know if Piotr meant Bothari for a blessing or a curse. But I bet he really will keep the raff off. Whatever the raff turns out to be. It's a strange list of birthday presents we've given our boy-chick."

They returned to the lab, to listen attentively to the rest of the doctors' lecture on Miles's special needs and vulnerabilities, arrange the first round of treatment schedules, and wrap him warmly for the trip home. He was so small, a scrap of flesh, lighter than a cat, Cordelia found when she at last took him up in her arms, skin to skin for the first time since he'd been cut from her body. She had a moment's panic. *Put him back in the vat for about eighteen years; I can't handle this. . . .* Children might or might not be a blessing, but to create them and then fail them was surely damnation. Even Piotr knew that. Aral held the door open for them.

Welcome to Barrayar, son. Here you go; have a world of wealth and poverty, wrenching change and rooted history. Have a birth; have two. Have a name. Miles means "soldier," but don't let the power of suggestion overwhelm you. Have a twisted form in a society that loathes and fears the mutations that have been its deepest agony. Have a title, wealth, power, and all the hatred and envy they will draw. Have your body ripped apart and rearranged. Inherit an array of friends and enemies you never made. Have a grandfather from hell. Endure pain, find joy, and make your own meaning, because the universe certainly isn't going to supply it. Always be a moving target. Live. Live. Live.

EPILOGUE

VORKOSIGAN SURLEAU

FIVE YEARS LATER

"Dammit, Vaagen," Cordelia panted under her breath. "You never told me the little bugger was going to be *hyperactive*."

She galloped down the end stairs, through the kitchen, and out onto the terrace at the end of the rambling stone residence. Her gaze swept the lawn, probed the trees, and scanned the long lake sparkling in the summer sun. No movement.

Aral, dressed in old uniform trousers

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

and a faded print shirt, came around the house, saw her, and opened his hands in a no-luck gesture. "He's not out here."

"He's not inside. Down, or up, d'you think? Where's little Elena? I bet they're together. I forbade them to go down to the lake without an adult, but I don't know. . . ."

"Surely not the lake," said Aral. "They swam all morning. I was exhausted just watching them. In the fifteen minutes I timed it, he climbed the dock and jumped back in nineteen times. Multiply that by three hours."

"Up, then," decided Cordelia. They turned and trudged together up the hill on the gravel path lined with native, Earth-import, and exotic shrubbery and flowers. "And to think," Cordelia wheezed, "I prayed for the day he would walk."

"It's five years' pent-up action all let loose at once," Aral analyzed. "In a way, it's reassuring that all that frustration didn't turn in on itself and become despair. For a time, I was afraid it might."

"Yes. Have you noticed, since the last operation, that the endless chatter's dried up? At first I was glad, but do you suppose he's going to go mute? I didn't even know that refrigeration unit was supposed to come apart. A mute engineer."

"I think the, er, verbal and mechanical aptitudes will come into balance eventually. If he survives."

"There's all of us adults, and one of him. We ought to be able to keep up. Why do I feel like he has us outnumbered and surrounded?" She crested the hill. Piotr's stable complex lay in the shallow valley below, half a dozen red-painted wood and stone buildings, fenced paddocks, pastures planted with bright green Earth grasses. She saw horses, but no children. Bothari was ahead of them, though, just exiting one building and entering another. His bellow carried up to them, thinned by distance. "Lord Miles?"

"Oh, dear, I hope he's not bothering Piotr's horses," said Cordelia. "Do you really think this reconciliation attempt will work, this time? Just because Miles is finally walking?"

"He was civil last night at dinner," said Aral, judiciously hopeful.

"*I* was civil last night at dinner," Cordelia shrugged. "*He* as much as accused me of starving your son into dwarfism. Can I help it if the kid would rather play with his food than eat it? I just don't know about stepping up the growth hormone, Vaagen's so uncertain about its effect on bone friability."

A crooked smile stole over Aral's face. "I did think the dialogue with the peas marching to surround the bread-roll and demand surrender was rather ingenious. You could almost picture them as little soldiers in Imperial greens."

"Yes, and you were no help, laughing instead of terrorizing him into eating like a proper Da."

"I did not laugh."

"Your eyes were laughing. He knew it, too. Twisting you round his thumb."

The warm organic scent of horses and their inevitable by-products permeated the air as they approached the buildings. Bothari reappeared, saw them, and waved an apologetic hand. "I just saw Elena. I told her to get down out of that loft. She said Lord Miles wasn't up

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

there, but he's around here somewhere. Sorry, milady, when he talked about looking at the animals, I didn't realize he meant immediately. I'm sure I'll find him in just a moment."

"I was hoping Piotr would offer a tour," Cordelia sighed.

"I thought you didn't like horses," said Aral.

"I loathe them. But I thought it might get the old man talking to him, like a human being, instead of over him like a potted plant. And Miles was so excited about the stupid beasts. I don't like to linger here, though. This place is so . . . Piotr." *Archaic, dangerous, and you have to watch your step.*

Speak of the devil. Piotr himself emerged from the old stone tack storage shed, coiling a web rope. "Hah. There you are," he said neutrally. He joined them sociably enough, though. "I don't suppose you would like to see the new filly."

His tone was so flat, she couldn't tell if he wanted her to say yes, or no. But she seized the opportunity. "I'm sure Miles would."

"Mm."

She turned to Bothari. "Why don't you go get—" But Bothari was staring past her, his lips rippling in dismay. She wheeled.

One of Piotr's most enormous horses, quite naked of bridle, saddle, halter, or any other handle to grab, was trotting out of the barn. Clinging to its mane like a burr was a dark-haired, dwarfish little boy. Miles's sharp features shone with a mixture of exultation and terror. Cordelia nearly fainted.

"My imported stallion!" yelped Piotr in horror.

In pure reflex, Bothari snatched his stunner from its holster. He then stood paralyzed with the uncertainty of what to shoot and where. If the horse went down and rolled on its little rider—

"Look, Sergeant!" Miles's thin voice called eagerly. "I'm taller than you!"

Bothari started to run towards him. The horse, spooked, wheeled away and broke into a canter.

"—and I can run faster, too!" The words were whipped away in the bounding motion of the gait. The horse shied out of sight around the stable.

The four adults pelted after them. Cordelia heard no other cry, but when they turned the corner Miles was lying on the ground, and the horse had stopped farther on and lowered its head to nibble at the grass. It snorted in hostility when it saw them, raised its head, danced from foot to foot, then snatched a few more bites.

Cordelia fell to her knees beside Miles, who was already sitting up and waving her away. He was pale, and his right hand clutched his left arm in an all-too-familiar signal of pain.

"You see, Sergeant?" Miles panted. "I can ride, I *can*."

Piotr, on his way toward his horse, paused and looked down.

"I didn't mean to say you weren't *able*," said the Sergeant in a driven tone. "I meant you didn't have *permission*."

"Oh."

"Did you break it?" Bothari nodded to the arm.

"Yeah," the boy sighed. There were tears of pain in his eyes, but his teeth set against any quaver entering his voice.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The sergeant grumbled, rolled up Miles's sleeve, and palpated the forearm. Miles hissed. "Yep." Bothari pulled, twisted, adjusted, took a plastic sleeve from his pocket, slipped it over the arm and wrist, and blew it up. "That'll keep it till the doctor sees it."

"Hadn't you better . . . containerize that horrendous horse?" Cordelia said to Piotr.

" 'S not h'rrendous," Miles insisted, scrambling to his feet. "It's the prettiest."

"You think so, eh?" said Piotr roughly. "How do you figure that? You like brown?"

"It moves the springiest," Miles explained earnestly, bouncing in imitation.

Piotr's attention was arrested. "And so it does," he said, sounding bemused. "It's my hottest dressage prospect. . . . You like horses?"

"They're great. They're wonderful." Miles pirouetted.

"I could never much interest your father in them." Piotr gave Aral a dirty look.

Thank God, thought Cordelia.

"On a horse, I could go as fast as anybody, I bet," said Miles.

"I doubt it," said Piotr coldly, "if that was a sample. If you're going to do it, you have to do it right."

"Teach me," said Miles instantly.

Piotr's brows shot up. He glanced at Cordelia, and smiled sourly. "If your mother gives permission." He rocked on his heels, in certain smug safety, knowing Cordelia's rooted antipathy to the beasts.

Cordelia bit her tongue on *Over my dead body*, and thought fast. Aral's intent eyes were signaling something, but she couldn't read it. Was this a new way for Piotr to try and kill Miles? Take him out and get him smashed, trampled, broken . . . tired out? Now there was a thought. . . .

Risk, or security? In the few months since Miles had at last acquired a full range of motion, she'd run on panicked overdrive, trying to save him from physical harm; he'd spent the same time near-frantically trying to escape her supervision. Much more of this struggle, and either she'd be insane, or he would.

If she could not keep him safe, perhaps the next best thing was to teach him competence at living dangerously. He was almost undrownable already. His big grey eyes were radiating a desperate, silent plea at her, *Let me, let me, let me* . . . , with enough transmission energy to burn through steel. *I would fight the world for you, but I'm damned if I can figure out how to save you from yourself. Go for it, kid.*

"Yes," she said. "If the Sergeant accompanies you."

Bothari shot her a look of horrified reproach. Aral rubbed his chin, his eyes alight. Piotr looked utterly taken aback to have his bluff called.

"Good," said Miles. "Can I have my own horse? Can I have *that* one?"

"*No*, not that one," said Piotr indignantly. Then drawn in, added, "Perhaps a pony."

"Horse," said Miles, watching his face.

Cordelia recognized the Instant Re-Negotiation Mode, a spinal reflex, as far as she could tell, triggered by the faintest concession. The kid should be put to work beating out treaties with the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Cetagandans. She wondered how many horses he'd finally end up with. "A pony," she put in, giving Piotr the support that he did not yet recognize how badly he was going to need. "A gentle pony. A gentle *short* pony."

Piotr pursed his lips, and gave her a challenging look. "Perhaps you can work up to a horse," he said to Miles. "Earn it, by learning well."

"Can I start now?"

"You have to get your arm set first," said Cordelia firmly.

"I don't have to wait till it *heals*, do I?"

"It will teach you not to run around breaking things!"

Piotr regarded Cordelia through half-lidded eyes. "Actually, proper dressage training starts on a lunge line. You aren't permitted to use your arms till you've developed your seat."

"Yeah?" said Miles, hanging worshipfully on his words. "What else—?"

By the time Cordelia withdrew to hunt up the personal physician who accompanied the Lord Regent's traveling circus, ah, entourage, Piotr had recaptured his horse—rather efficiently, though Cordelia wondered if the sugar in his pockets was cheating—and was already explaining to Miles how to make a simple line into an effective halter, which side of the beast to stand on, and what direction to face while leading. The boy, barely waist-high to the old man, was taking it in like a sponge, upturned face passionately intent.

"Want to lay a side-bet, who's leading who on that lunge line by the end of the week?" Aral murmured in her ear.

"No contest. I must say, the months Miles spent immobilized in that dreadful spinal brace did teach him how to do charm. The most efficient long-term way to control those about you, and thus exert your will. I'm glad he didn't decide to perfect whining as a strategy. He's the most willful little monster I've ever encountered, but he makes you not notice."

"I don't think the Count has a chance," Aral agreed.

She smiled at the vision, then glanced at him more seriously. "When my father was home on leave one time from the Betan Astronomical Survey, we made model gliders together. Two things were required to get them to fly. First we had to give them a running start. Then we had to let them go. Learning just when to let go was the hardest part."

Piotr, his horse, Bothari, and Miles turned out of sight into the barn. By his gestures, Miles was asking questions at a rapid-fire rate.

Aral gripped her hand as they turned to go up the hill. "I believe he'll soar high, dear Captain." ■

MOVING? If you want your subscription to *Analog* to keep up with you, send both your old address and your new one (and the ZIP codes for both, please!) to our subscription department: Box 7061, Red Oak, Iowa 51566.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Charles Sheffield

THE MOTE IN NASA'S EYE

The problems with the Hubble telescope are only pretty technical.

I. INTRODUCTION

This is a tale of the search for the edge of the Universe; a story of high goals, intense labor, and infuriating delays, followed by a few weeks of scientific delight and seemingly fulfilled ambition.

It is also a story of bureaucratic rivalries, political influence, divided attention, and bungling, followed by years of scientific dismay.

It is a tale that no one likes to tell. But it needs to be told, because finally it is a morality story with lessons that we must learn to accept.

To understand the Hubble Space Telescope, and what went wrong with it, some basic questions have to be answered:

- What different kinds of telescope are there?
- Why was the Hubble sent into space, where it is hard to fix problems, instead of leaving it on the ground?
- What is wrong with the Hubble?
- What do the Hubble's problems mean for astronomy?
- Can the Hubble be fixed, and if so, how and when?
- How do we prevent the same sort of thing from happening again?

II. TELESCOPES

A telescope results when a convex lens (called the objective lens, or just the objective) is placed some distance from your eye, a concave lens (called the eyepiece) is set rather closer, and you look through the pair. The convex lens converges the rays of light that pass through it, bringing them to a focus. The concave lens takes that converged bundle of light rays and brings each back to its original direction. The eye sees an object as enlarged, closer than its true distance.

This describes one form of telescope, usually called a *Galilean* telescope. Another one, the *Keplerian* telescope, is made by using convex lenses as both objective and eyepiece.

The larger the objective, the greater its light-gathering power. In describing a telescope, it is traditional to define its "size" by the diameter of the objective, e.g. a "six-inch telescope" has an objective six inches across. The *aperture* of a telescope is normally the same as the diameter of the objective lens.

The Galilean and Keplerian telescopes, or any other variant that depends on systems of lenses, are *refracting telescopes*, or just *refractors*.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

They have several problems. First, different wavelengths of light are bent (refracted) differently by glass, which acts as a prism to decompose light into its separate colors. Thus red light will be brought to a focus at a different distance from the objective than blue light. The result is a colored and fuzzy image. This is known as *chromatic aberration*.

Second, most lenses do not bring all rays of light to a focus at the same distance. Rays that pass through the central part of a convex lens may be brought to a focus farther away than rays that pass through the outermost regions. The result is a blurred image, and this problem is known as *spherical aberration*.

Finally, there is a third problem with large refractors: the thickness of the lens must be so great at its center that an appreciable fraction of the light will be absorbed or scattered in passage through it.

Spherical aberration and chromatic aberration were not clearly distinguished until Isaac Newton's experiments in optics. He showed that spherical aberration is the consequence of the shape of the lens, while chromatic aberration depends on the materials from which lenses are made.

Newton decided that spherical aberration should, with suitable lens-making techniques, contribute less to image degradation than chromatic aberration; but he believed (wrongly) that there was no way of eliminating chromatic aberration using lenses. So he was led to build a quite different type of telescope: the *reflecting telescope*.

In a reflecting telescope, or *reflector*, a concave mirror takes the place of the objective lens, and serves to focus the light falling onto it. A smaller mirror (called the secondary mirror, or *secondary*) reflects the focused light from the objective either back down and out of a hole in the middle of the main mirror (this is called a *Gregorian* or a *Cassegrain* reflector, depending on the shape of the secondary) or out through the side of the telescope (this is called a *Newtonian* reflector)[1]. Since all wavelengths of light follow the same law of reflection, chromatic aberration is no longer a factor; further, there is no loss of light as there would be in passing through a thick glass lens. What remains is the problem of making a sufficiently reflective surface. And of course we still have to worry about spherical aberration, which depends on making the mirror just the right shape to bring all the light to a sharp focus. (Read that sentence again; it will come back to haunt us.)

Reflectors enjoy one other great advantage over refractors. There is no way of decreasing the weight of very large lenses; the mirror of a large reflector, by contrast, can be paper-thin provided that it is strong enough to hold its correct shape. In the 20th century, all the big telescopes have been reflectors. It was thus almost inevitable that the first large space telescope, the Hubble, would be a reflector. Still unanswered, however, is a basic question: *Why put a telescope in space at all?*

To answer this question, let us pay a visit to the Grand Duchy of Synesthesia.

[1]The Hubble Space Telescope actually employs another variation, called the *Ritchey-Chrétien* reflector, which provides a rather larger and better field of view than earlier designs.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

III. A VISIT TO THE GRAND DUCHY

The Grand Duchy of Synesthesia is a small, land-locked country set in a valley in the High Pyrenees between Spain and France. The inhabitants of this little nation are a handsome, vigorous people, of a physical type similar to the Basques. They would be little known to the outside world, were it not for one odd fact of biology. Some seven hundred years ago, a successful natural mutation occurred among them. Leading to increased health and longevity, this quickly spread through the land; however, the isolation of the Grand Duchy, and the strong preference of the inhabitants for marriage within their own group, limited its spread beyond the borders of Synesthesia.

The mutation might have passed unremarked to this day were it not for one odd side-effect. The middle ear of those possessing the mutation has been changed in structure, so that they are sensitive only to sound frequencies between 220 and 385 cycles per second—from about the A below middle C, almost to the G above it. Outside this range, of rather less than one octave, the inhabitants of the Grand Duchy are totally deaf.

The people of Synesthesia for many centuries lived their lives unaffected by, and indeed unaware of, their curious physical defect. Even a visitor would not at first notice anything peculiar. The National Anthem of the Grand Duchy, which bore a curious resemblance to "Twinkle, Twinkle Little Star," was perhaps a little dull and of limited range. (By contrast, "The Star-Spangled Banner" stretches out over an octave and a half—too much for many people who have no connection with the Grand Duchy.) The people of Synesthesia did speak in something of a monotone, with little rise and fall in their voices to express surprise or emphasis. And the men were all tenors, and the women all contraltos.

But then the visiting tourist would begin to notice other little oddities. The piccolo and the double bassoon were not to be found in the orchestras of the Grand Duchy. The ceremonial Great Horn of Synesthesia, blown at all coronations, was held to be purely ceremonial, since it did not emit any audible sound at all.

So it went until the 1930s, when the rest of the world suddenly intruded on the Grand Duchy. The arrival of talking pictures, and a frustrating inability to hear the words of Donald Duck and Mickey Mouse, alerted the natives to their plight. They consulted the best medical authorities, but were told that nothing could be done.

Matters remained unchanged until the 1960s, when the Court Physician of Synesthesia, Dr. Strabismus, made an astonishing discovery: an operation was possible, one that would provide the Synesthesians with a normal range of hearing. But for success, that operation could only be performed *in free fall*. Thus began the extraordinary Synesthesian space program, which has led the tiny republic to its preeminent position today as a spacefaring nation.

IV. WHY SPACE TELESCOPES?

That is quite enough history of the Grand Duchy. The point is this: If we

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

substitute *vision* for *hearing*, we—and everyone in the world—are no better off than the Synesthesians.

They hear sounds that range over less than one octave. Two sounds, one of which is twice the frequency of the other, by definition differ from each other by exactly one octave. In the same way, we can speak of an "octave" of light. Two *colors*, one of which is twice the frequency of the other, differ by an octave. With light it is more usual to speak in terms of *wavelength* rather than frequency, but the same rule applies: two colors, one of which has twice the wavelength of the other, differ by just one octave.

Violet light, the shortest wavelength that our eyes can see, has a wavelength of about 0.40 micrometers. Deep-red light, at the other end of the visible spectrum, is about 0.70 micrometers (both these limits depend on intensity, and on the presence or absence of other visible colors). This range, a factor of 1.75, corresponds to the sound range heard by the Synesthesians. We all see less than one octave.

The range of audible sounds for a normal human is from about 20 cycles per second to about 20,000. (Women do better than men, young people better than old people.) This corresponds to about 10 octaves, since $2^{10} = 1{,}024$. If we could see an equivalent range of wavelengths, we would be sensitive to radiation from the far ultraviolet to deep infrared. These radiations are just as real as visible light. The Universe is filled with them, flashing in on us from all kinds of sources; but we, like the Synesthesians, are unable to perceive all but the tiniest middle region of wavelengths.

Evolution has adapted our eyes to the region where most of the Sun's energy reaches the surface of the Earth. Ultraviolet light is scattered and absorbed in the atmosphere, particularly in the ozone layer. Little of it reaches the ground. Most infrared radiation, from about 0.70 micrometers wavelength (the long edge of the visible) out through 2.50 micrometers, gets through the atmosphere, but the Sun shines less brightly in this region than at visible wavelengths.

The Earth's atmosphere protects us from harmful radiation, and we could not live without its shield. But some of the most important astrophysical events send out their identifying signals only at wavelengths that we cannot see. Their signals do not reach the surface of the Earth at all. They are absorbed or scattered by the atmospheric censor.

So here we have one excellent reason to put a telescope out in space. There are others, just as good. A telescope improves the performance of the human eye in two different ways. It makes things look nearer, which allows more detail to be seen on a distant object. It also captures more light than the human pupil. We need to distinguish clearly between these two functions of the telescope.

For example, using a telescope with a two-inch objective, it is easy to follow Galileo's footsteps and look at the four largest satellites of Jupiter. They are visible close to the planet on any clear night. Even with the naked eye, people with exceptionally good vision may un-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

der ideal conditions make out the outer two, Ganymede and Callisto. But no one, no matter how good his or her eyes, has ever seen Io, the innermost of the four, without a telescope.

This is partly a question of brightness: Io's feeble light is swamped by that of Jupiter. But even if Io were as bright as Jupiter, our eyes would have trouble separating it from the planet. The limitation lies in the *resolving power* of the human eye.

Resolving power is a complex issue, but for most purposes it is nothing more than the ability to see two close objects as distinct, rather than as a single merged image. The unaided eye can separate two bright points about one arc-minute apart (one arc-minute, 1/60 of a degree, is about 1/30 the apparent diameter of the Moon). As seen from Earth, Io and Jupiter are at most two arc-minutes apart. If Io were brighter, we might barely see the planet and the satellite as two separate objects.

To measure resolving power, or resolution, there is a useful formula due to Lord Rayleigh. If **d** is the smallest separation of two points that allows them to be seen as separate objects, then

$$d = 1.22 \times R \times L/D$$

In this formula, **d** is in kilometers, **R** is the distance of the observed object in kilometers, **L** is the wavelength of light used for the observation in millimeters, and **D** is the aperture of the telescope lens or mirror in millimeters.

Since this is a theoretical resolution, any real telescope may fall short of it. If an instrument has a resolution this good, it is said to be *diffraction-limited*, and to achieve the Rayleigh resolution.

Small telescopes, with apertures up to six inches or so, achieve and may even surpass the Rayleigh resolution. But larger astronomical telescopes do not. For example, the 200-inch telescope at Mount Palomar, applied to study the surface of the Moon, would have L = 0.00055, R = 400,000, and D = 5,080. That gives d = 0.053 kilometers. If the Mount Palomar telescope achieved the Rayleigh resolution, it would allow objects 50 meters apart on the Moon's surface to be distinguished from each other. In practice such a telescope can only resolve objects a kilometer or more apart. The telescope at Mount Palomar falls a factor of twenty short of the Rayleigh resolution.

The problem is not in telescope design or manufacture. The villain of the piece is, again the Earth's atmosphere. It is in constant small-scale turbulence, which reduces the performance of an Earth-based telescope to that of a ten-inch diffraction-limited instrument. The justification for the construction of large Earth-based telescopes lies in their *light-gathering* power, not their resolving power.

Astronomers have known these facts for centuries, but without access to space all that could be done was to make observations from high altitudes, above as much of the atmosphere as possible. Today's best ground-based observatories are all on mountain tops. The Mauna Kea observatory is at 14,000 feet—high enough to make altitude sickness an occupational hazard for astronomers. But space provides better resolution, and access to wavelengths beyond the visible. Modern astronomy

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

needs both.

V. THE HUBBLE SPACE TELESCOPE

The Hubble Telescope was conceived on a grand scale: a 2.4 meter (originally, 3-meter) reflector, launched and serviced by the Shuttle, possessing multiple observing instruments, and with a 15-year lifetime. Astronomers from all over the world would participate in its use. It would see deeper into space and farther into the past than any other optical instrument, it would provide an improved distance scale for the Universe, and it would see stars, planets, galaxies, and every other extraterrestrial entity with unprecedented clarity.

The detailed plans for the Hubble date to at least 1975. An initial launch date of 1982 was proposed. The main contractors and government management centers were assigned. NASA's Marshall Space Flight Center would be the principal program manager, with NASA's Goddard Space Flight Center responsible for spacecraft control. Lockheed would be the spacecraft builder, while Perkin-Elmer (now Hughes Danbury) would make the 94-inch (2.4 meter) objective mirror. Finally, a new organization, the Space Telescope Institute, would interface with astronomers worldwide and would approve, schedule, and control all experiments on the Hubble.

It is worth examining this arrangement in more detail. Lockheed was an excellent choice as spacecraft integrator, with great experience in this area. Perkin-Elmer, one of the world's leaders in large-scale optics, was well-equipped to tackle the problem of fabricating the finest telescope mirror ever made. However, the divided responsibility between Goddard and Marshall could have been anticipated to provide problems. NASA field centers guard their independence, and do not have a good history of working well together. Further, while Goddard had a great track record in unmanned spacecraft development, Marshall did not. They were best-known as developers of launch systems—the Saturn boosters, back in Apollo days, and more recently the Shuttle. Marshall also had a reputation for an uncooperative, not to say arrogant, attitude. It dated back to long before their management role in pressing for the launch of the Challenger in adverse weather conditions. Many outside NASA already questioned the Marshall management methods.

Why, then, was the Hubble given to Marshall? For the worst of possible reasons: Marshall needed a major new project, desperately. Its other assignments and funding sources were drying up. The fact that the center had little experience in unmanned spacecraft, and even less in telescope work, was ignored. The management role went to Marshall for essentially political reasons.

The development of the Hubble was not going to be easy. Everyone knew that. Difficulties were to be expected, even with management from a single NASA center, even if that management had the appropriate technical experience. And difficulties arose—worse than anyone had dreamed. Coordination and cooperation between Marshall and

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Goddard was inadequate. The centers guarded their territories and met as much to fight as to work together. Hardware progress was slow, and software development was a mess. Contractors complained of inadequate or contradictory directions. Despite great pressure to meet deadlines, the launch date slipped.

And slipped again. To 1983. To 1984. To 1985. The Hubble was finally scheduled for an early 1986 launch. In January of that year, *Challenger* exploded. It was four more years until, on April 24th, 1990, the Hubble was finally carried into space and deployed by the Shuttle.

VI. HUBBLE, HUBBLE, TOIL AND TROUBLE

Every spaceborne instrument goes through an initial breaking-in period. During this month or two, outgassing is performed, temperatures stabilize to the space environment, and command and control functions are exercised. Minor problems are the rule rather than the exception.

The Hubble, with a cost of two billion dollars, give or take a few hundred million, received an unusual amount of public attention during this period. Its teething troubles made front page news. But the minor problems encountered were gradually worked through or around.

And then, two months after launch, the first signs of something awful appeared. The Hubble had been refusing to come into focus. On the weekend of June 23, 1990, spacecraft controllers at Goddard set the telescope completely out of focus on a stellar target, and then gradually brought it step-by-step towards and through what should have been perfect sharp focus. What they saw was a classic textbook example of spherical aberration.

Not just tiny amounts of aberration, either. The Hubble's specification called for 70% of the light from a point target to be captured within 0.1 arc-seconds radius on the image. This is certainly a tiny radius—the size of a dime, viewed from 20 miles away. But the scientists at Perkin-Elmer thought that they had met that spec, and exceeded it, with the primary mirror. Instead, the Hubble was bringing only 20% or less of the light within the 0.1 arc-second radius. After running through and discarding a number of explanations, only one conclusion remained: The primary mirror had been formed, with exquisite care, to the wrong shape.

Once that fact was established, the uproar began. How could such a gross error occur, when hundreds of people supposedly checked the mirror-making every step of the way?

First, note that this "gross error" in the shape of the mirror is only relative to the design specification. The actual error in the shape is no more than $1/50$ the width of a human hair over the whole mirror. However, at the levels of accuracy sought in the Hubble that is a huge amount, more than a quarter of a wavelength of visible light. The specification called for the mirror to have a distortion of less than $1/65$ of a wavelength. Any number of standard mirror tests, long employed in the testing of ground-based telescopes, ought to have caught a quar-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ter-wavelength distortion.

What happened?

In 1979, the Hubble's mirror arrived at Perkin-Elmer's plant in Danbury, Connecticut, for final grinding. It had been roughed into shape at their plant in Wilton. Although making the mirror probably looked to the rest of the project team like the easiest part of the Hubble, the technicians at Perkin-Elmer would have disagreed. They were obsessed with that 1/65 wavelength requirement for the primary mirror—that was the spec they would have to meet or exceed.

They already had available to them a device that would check the shape of the mirror at every stage of the grinding. They decided to build a better one, an instrument using lasers that would check the mirror's shape to 1/1000 of a wavelength.

When this new instrument was ready and they used it on the rough-ground mirror, it showed half a wavelength of spherical aberration which had not been noticed at Wilton. But that didn't seem important, because what had been delivered to Danbury was after all only the first shot at the right shape.

The team at Perkin-Elmer went ahead and ground the mirror using their new super test device. They not only met the specification—they exceeded it. By April, 1981, they had finished the job, to their satisfaction and NASA's. At that point they took the mirror back to the Wilton plant, for a required final check on the mirror's focal length. The test showed that the focal length was fine; but it said there was a lot of spherical aberration in the mirror, over a quarter of a wavelength of it.

Did they say, Oops?

They did not. They decided that this was not surprising with the relatively primitive testing device at Wilton. They certified that the mirror was fine, NASA accepted it, and the record of the test was put away into the file in May, 1981. It remained there for nine years, right through the *Challenger* accident and the final Hubble launch. It surfaced when an official investigation committee into the Hubble problems, headed by Lew Allen of JPL, visited Danbury in July, 1990. By then it was all too obvious. The crude, old-fashioned Wilton test had spoken the truth. The new, wondrously sophisticated test at Danbury, thanks to an accidental switch of a piece of equipment by a Perkin-Elmer technician, was lying.

And now we have to ask some questions. The mirror was ground to the wrong shape, not just a little bit but a lot. Why didn't Perkin-Elmer apply some old-fashioned sanity tests? There are half a dozen of them in the arsenal of the telescope maker, any one of which would have pointed at once to the error. Why didn't NASA's management team *insist* on those sanity checks?

There seem to be several answers. First, the Perkin-Elmer group was not worrying about anything as gross as a quarter of a wavelength. They had their eyes fixed firmly on that 1/65 wavelength spec. They simply did not think it necessary to do the cruder tests.

Second, extra tests mean time and money. There was not much of either available, with cost and time overruns bursting out all over the project.

Third, there were only three NASA

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

staff on-site, because Perkin-Elmer was up to its neck in classified projects for the Air Force. The USAF didn't really want *anybody* from NASA in the place, and the Pentagon set the ground rules for the number of NASA people who could be full-time at Danbury. Marshall, who should have gone toe-to-toe with the Air Force on this issue, were either too complacent or too scared to do so. The experts on telescope optical systems, who ought to have been knee-deep in the testing program and who would have known exactly what questions to ask, were only occasional visitors to Danbury. They had to rely on briefings by Perkin-Elmer staff, who *wanted* the mirror accepted; or by NASA representatives, who served more as a filter of information than as a useful second opinion.

Finally, what about the overall project scientists? They had become bogged down in budget battles within NASA. Costs were out of control, and there was a constant fight to prevent the Hubble's performance from being whittled away. In the end, with classic irony, the project was destroyed from within.

VII. THE IMPACT

So we have a Hubble Space Telescope which does not approach its specification. What does that mean in practical terms?

Let us consider the crucial experiment that was used to justify the whole Hubble: setting a better distance scale for the Universe.

This was to be done through the study of Cepheid variable stars in the Virgo Cluster, about 50 million light-years away. A Cepheid is a type of variable star whose period is directly related to its absolute brightness. So if you can determine the period, and know how bright it *looks*, you can tell how far away it is. But to pick out single stars, Cepheid variables or any other, in distant galaxies, you need the best resolution that the Hubble was supposed to produce. It is not producing anything like that. It is worse by a factor of between seven and ten. Forget the improved distance scale for the Universe.

If we apply a similar analysis to all the main experiments proposed for the Hubble, we discover some melancholy statistics. Maybe 40% of the experiments are stone dead with the present level of Hubble performance. Another 20% to 30% have been severely affected; no more than 20% or 30% have survived with just minor wounds. It is safe to say that if the actual level of Hubble performance had been presented to Congress as the *projected* performance, funding would never have taken place.

The only good news is a consequence of the bad news. Many experiments can succeed now only if they are allotted more observing time. However, that observing time may be available—a bequest of dead experiments that cannot be done at all with the present degraded level of Hubble performance.

VIII. ALL THE KING'S HORSES

The information that comes back to Earth from the Hubble is not pictures. It is telemetry data, bit streams that go straight from space into Earth-based computers. We are used to the prestidig-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

itation of modern computerized image processing methods, that produce everything from Lucasfilms to pictures of single atoms. Can these techniques restore the Hubble data to what they should have been?

NASA, perhaps rashly, declared that they can. Congress was told that image processing would be able to salvage the data. The same philosophy was presented during a meeting of an image processing group working specifically on the Hubble. "All the light that the Hubble was supposed to capture is being caught," said one NASA representative. "The problem is just that of reassigning it to its correct origin."

I wanted to mention my three-year-old daughter, and what she had told me about her friend, Humpty-Dumpty. But it seemed undiplomatic.

The telescope's defect does indeed have the property of spreading light that should have been received at one point in the image over a small image area. Every observing instrument has such a property to some extent. The *point spread function* of an instrument describes how a single point light source is distributed in the image. The function is generally different at each point of the telescope's field of view, but if it is known everywhere, then a well-defined mathematical procedure exists to calculate an inverse transformation. Applying that inverse function to the received image data will then yield the original, undegraded image.

As I have described this it sounds very simple, but it is not. The ideal point spread function would be something like the familiar bell-shaped curve of a normal distribution, with a steep peak at the center and falling smoothly and rapidly away in every direction. In practice, a point spread function almost always contains zero values, and the inverse function contains infinite values. These infinities must be approximated, and so the function used to "unsmooth" the blurred image becomes highly complex. Worse than that, the process of *deconvolution*, which is the name of the Humpty-Dumpty technique of putting the light back where it should have been in the original source, is apt to produce *artifacts*. These are things that appear in the processed image, but were never in the original.

Artifacts may be tolerable when the object observed is well isolated from others (a rarity, in the crowded sky). But if the study is, for example, a complicated stellar cluster, unscrambling is impossible. There is no way of taking the light at a point of the image and assigning it correctly to its source in the sky. Astronomers are justifiably suspicious of any process which produces image artifacts. Many say, "Give us raw data, with nothing done to it. We want *information*, not pretty pictures. We'll worry about pulling the information we need out of the data."

Clever image processing methods will help, certainly, in producing better *looking* images. That is something NASA badly needs for publicity purposes. But no image processing method can take a system that scatters 80% of the received light from a point source outside a radius of 0.1 arc-seconds, and convert it to one that puts only 30% of the light outside. The Hubble, with its

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

present system of mirrors, is badly flawed, and will remain so until a hardware change is effected.

IX. FIXING THE HUBBLE

There is one bright spot (not an artifact) in the Hubble picture. The telescope was *designed* to permit changes to its instruments. No one expected that such changes would be needed on the first day of operation, but fixes will be possible using the Shuttle. Unfortunately, the first chance to make a fix will be in 1993, and even that requires the Shuttle manifest to hold together. Any new grounding of the fleet will probably slip the date.

The primary mirror is the trouble spot, but the simplest fix is not its replacement—it is almost eight feet across, and although it is made of a lightweight glass honeycomb it still masses almost a ton. It is difficult to imagine a successful in-space change to a primary mirror with today's level of sophistication for Shuttle-based engineering.

In any case, it is easier to correct the problem by replacing small mirrors in the optical path beyond the secondary. Each one is about as big across as a nickel, and they focus light onto the Charge Coupled Device detectors. This fix sounds relatively trivial—except that no engineering task in space is trivial.

X. THE COMPETITION

Flawed as it is, the Hubble is still a formidable instrument. Already it is producing images with unprecedented detail. When the correction is made to the optics of the Hubble, it will stand as an astronomical instrument unchallenged by any other.

Or will it?

In the 15 years that the Hubble was under development, ground-based astronomy was not sitting idle. There has been major progress in two areas. First, telescopes as large as ten meters aperture are under construction. This is twice the mirror diameter of the 200-inch Hale telescope at Mount Palomar. By the year 2000 there should be half a dozen ground-based telescopes at least half as large again as the Mount Palomar reflector; and they will be set in high places, where atmospheric absorption and turbulence are at a minimum. These telescopes are possible because of new methods of construction. Rather than a single, monolithic mirror, there will be scores of smaller hexagonal mirrors, each segment delicately controlled by computers to maintain overall telescope alignment. The 10-meter Keck telescope is scheduled for its "first light" imaging of the heavens in 1991. Installed at 14,000 feet on Mauna Kea, Hawaii, it will have 17 times the light-gathering power of the Hubble. For spectroscopic work that will be a huge advantage, even in 1993 when (we hope) the Hubble will be performing to its original specified level.

Second, the age-old problem of atmospheric turbulence is yielding to new attacks. Stars twinkle because their light is refracted as it moves down continuously changing paths through the Earth's air. If we were to plot the final destination of rays that enter the atmosphere, we would find an ever-changing point. A new field, known as *adaptive*

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

optics, recognizes this fact, and corrects for it. The technique requires that the changes to incoming wave-front be monitored electronically, after which very fast changes are made in the receiving equipment to compensate for moment-by-moment atmospheric distortions. The time scale for changes is $^1/_{100}$ of a second or less; predictably, computer analysis is at the heart of the new approach.

Adaptive optics may allow ground-based telescopes to perform at or close to their diffraction-limited design. For example, the 3.5 meter telescope at La Silla in the Chilean Andes has yielded 0.18 arc-second images, only 4 times the Rayleigh resolution for the instrument. This is approaching Hubble performance, and it is early days for adaptive optics.

It is safe to look for increases in the overall size of ground-based telescopes, and to expect that new processing methods will improve their resolution, perhaps to their diffraction-limited values. Where, then, will that leave the Hubble, assuming that in 1993 a successful fix gives the instrument its original specified performance?

The Hubble will be unmatched for faint object detection, and it will still have to itself (or to itself and its space-based brethren) the ultraviolet and regions of the infrared to which Earth's atmosphere is opaque. But it will almost certainly be upstaged for visible and much infrared spectroscopic work by the ground-based large telescopes. And ultimately, NASA will have to do what it declined to do during the development and testing of the Hubble: enter into a symbiosis rather than a competition with ground-based astronomers, recognizing that no single instrument or class of instruments is the best for everything.

XI. THE MORAL

Large telescopes have been built in the past. In their day, they challenged the state of the art as much as the Hubble. The problems that they ran into were often horrendous and all different, but the really successful large telescopes have had one thing in common: associated with each, *obsessed* by each, you will find a single individual.

In building his great 18th-century reflectors, William Herschel, according to his sister, disregarded his health and all temporal restrictions when he was at work on them. He also did not worry too much about what happened to others. "I could give a pretty long list of accidents," she wrote, "which were near proving fatal to my brother as well as myself." Henry Draper mentions a continuous spell of 17 hours polishing a 28-inch Cassegrain reflector, but gave the impression that was nothing unusual. George Ellery Hale was totally obsessed with the production of large telescopes—the 40-inch Yerkes refractor, the 60-inch and 100-inch Mount Wilson reflectors, and the 200-inch Hale telescope at Mount Palomar. He gave his life to them.

Now name for me, if you can, that central individual for the Hubble. Where is the man or woman who followed the telescope from first concept to first light imaging?

There is no one. Project scientists have come and gone. NASA manage-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ment teams have played musical chairs around the Hubble. The Allen inquiry will have difficulty assigning final blame for what happened, because the project in the early 1980s, when the error was made, was in a continuous state of flux, with divided management responsibility. Too many cooks.

Small is beautiful was a slogan of the 1960s. I will accept it as permanent truth, if it refers not to the size of the creation, but to the *size of the project team*. Rudyard Kipling said "all work is one man's work." Even in the mightiest development efforts, where thousands of individuals make major contributions, that tends to be true. The Manhattan Project is a prime example of a group effort. There were dozens of scientists working on the atomic bomb whom history has judged as geniuses. But at the top, following everything at a level of detail that even his fellow-workers found mind-boggling, was one man: Robert Oppenheimer. Through the 1960s, when NASA had just nine years to put a human on the Moon, a handful of staff—Wernher von Braun, George Mueller, and George Lowe—poked into everything and tracked everything.

If I were in Congress, and a group of scientists came to me—from any field, Superconducting Super Collider to Mapping the Genome—I would listen a little bit to the technical arguments. Not very much, because surely the scientists know enough about their business to snow a non-specialist. And at the end, when the request came for large amounts of money, I would ask my key question: "Where is the person who is going to live and die for this project? Bring him to me, let me talk to her and feel the enthusiasm and the obsession. Unless and until you can do that, it is pointless for you to come again. Because I will not approve your funding."

This approach will not *guarantee* the success of ambitious new scientific projects. Nothing can do that, if the projects are truly ambitious. But I'll bet everything I have that it would improve our chances of avoiding future fiascoes. ■

XII. REFERENCES

1) King, H. C. *The History of the Telescope*. Dover Publications, Inc., 1979. Reprint of the original 1955 edition by Charles Griffin and Co.

2) Sommerfeld, A. *Optics*. Academic Press, 1964.

3) Longair, M. *Alice and the Space Telescope*. Johns Hopkins University Press, 1989.

4) Field, G., and D. Goldsmith. *Space Telescope: Eyes Above the Atmosphere*. Contemporary Books, 1990.

5) Bahcall, J., and L. Spitzer. "The Space Telescope." *Scientific American*, July, 1982.

6) *Sky and Telescope*. The entire April, 1990 issue, is devoted to the Hubble Space Telescope.

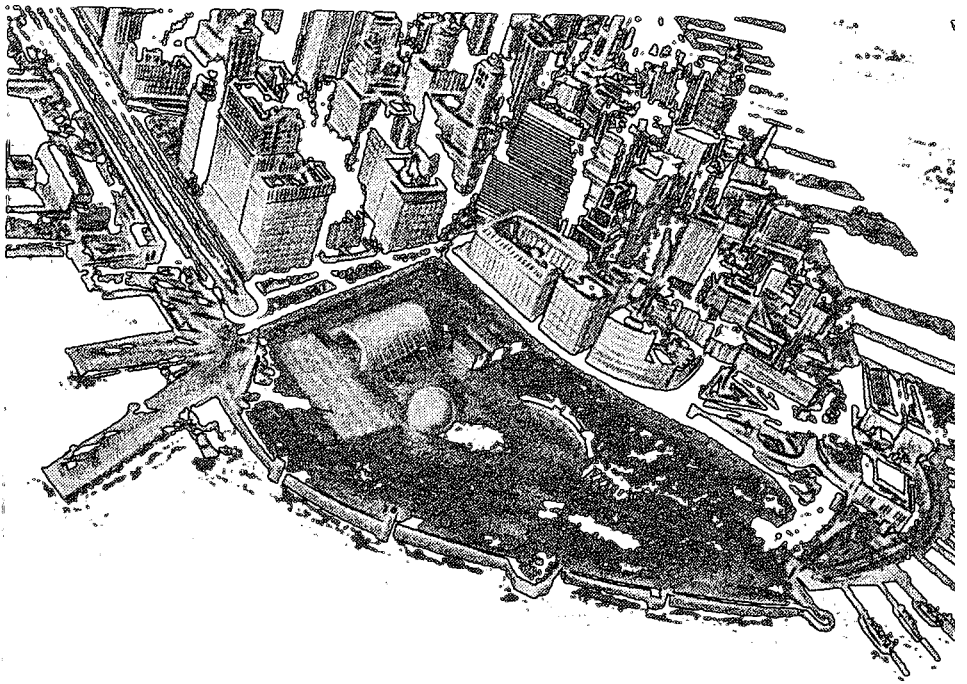
7) Smith, R. *The Space Telescope*. Cambridge University Press, 1989.

8) Waldrop, M. M. "Hubble Managers Start to Survey the Damage." *Science*, 6 July, 1990.

9) Waldrop, M. M. "Astronomers Survey Hubble Damage." *Science*, 13 July, 1990.

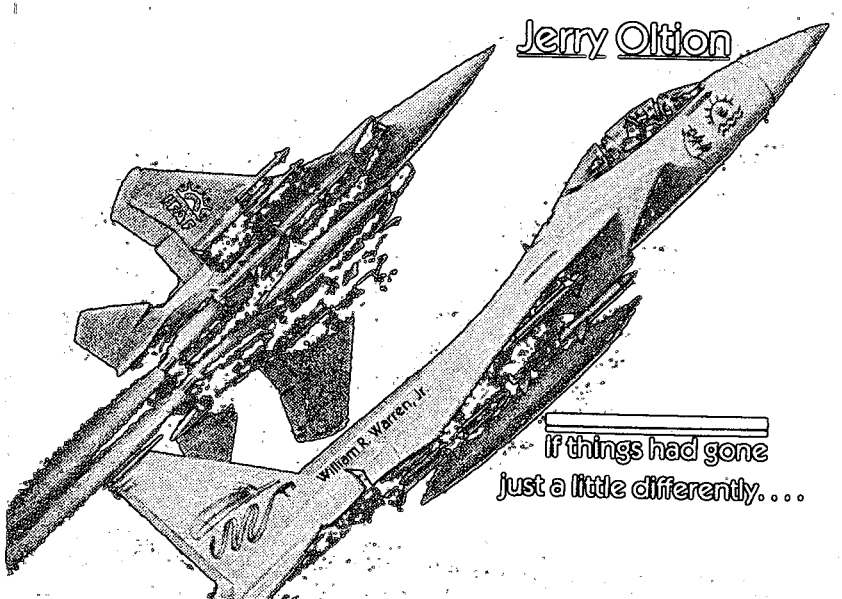
10) Waldrop, M. M. "Hubble: The Case of the Single Point Failure." *Science*, 1 August, 1990.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



RED ALERT

Jerry Oltion



If things had gone just a little differently. . . .

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The scramble siren catapulted him out of a sound sleep. Red Cloud shuddered and sat up in bed, wincing a second time as the lights automatically switched on. In the next bunk, Sitting Bull groaned and fumbled to free himself from his covers. The siren died just as the door between the two bunks opened and Brave Joseph stuck his head in.

"Look lively!" Joseph shouted. "Trouble on the Island."

"Where else?" Red Cloud muttered, but Joseph was already moving down the hallway, banging on doors and bellowing orders.

Sitting Bull staggered to his feet and began pulling flight gear from the rack. Red Cloud got up and matched him action for action, donning G-suit, harness, survival vest, combat moccasins, and so on with practiced precision.

"Ready to fly?" he asked as he pulled the zipper on his flight jacket up to his neck. It would be cold outside, this late in the autumn.

For answer, Sitting Bull grinned and howled a Sioux war cry at the ceiling.

Red Cloud took up the call, and together they ran whooping from their quarters out to the airfield where their Eagle-15s waited, ground crews already swarming around them. The smell of JP-4, the sharp, bladelike silhouette of the jet against the morning sky, the sound of engines already howling up to speed—all mixed with a kick of adrenaline to send Red Cloud swarming up the ladder and leaping eagerly into the cockpit of his plane.

Helmet and shoulder straps took ten seconds. The checklist took another thirty; in ten more he was rolling, Sitting Bull right beside him on the taxiway, less than five minutes from first alarm.

"Eagle One ready," he said into the helmet microphone.

"Eagle Two ready." Sitting Bull's voice was tight with excitement.

"Cleared for takeoff," the flight controller said.

Red Cloud rolled out onto the runway, turned, and pushed the throttles in a smooth slide all the way forward until the afterburners kicked in. Acceleration pushed him back into his seat. He watched his airspeed climb past 100, the needle a blur. At 150 he inched the stick back, and the Eagle leaped into the sky. He looked out to his left. Sitting Bull was still right beside him, half a wingspan away.

"Course zero eight three," the flight controller said.

"Zero . . . eight . . . three," Red Cloud grunted as the gee force pushed him deeper into the cushion. He centered the stick again at a 45 degree climb and said, "All right, we're on our way. What's the mission?"

"Photo recon," the controller said. "High-level overflight caught signs of heavy building activity in Central Park. We want you to check it out up close."

"How close?" Sitting Bull asked.

"Stay on our side of the line," control replied. "You do not have airspace violation clearance."

"Damn."

"Be careful what you wish for," Red Cloud said, but he knew how Sitting Bull felt. In his four years as a pilot, Sitting Bull had never violated the paleface's territory. In his seventeen years, Red Cloud had done it only once, in

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

retaliation for the cowardly strafing of the airfield that had cost Geronimo, his former wingman, his life. It had been exhilarating, that flight into hostile territory, but that one raid had nearly started an all-out war. Never mind that the palefaces flew over Indian territory whenever they pleased, ignoring treaties and honor alike; they regarded any incursion into *their* territory as an act of aggression.

And they were always claiming more airspace than they actually owned.

Red Cloud eyed the banks of gauges and switches before him and said, "Double check your weapons arming systems."

"Weapons arming systems check green," said Sitting Bull.

Red Cloud's own weapons were ready as well. One flip of a switch would arm the four *tomahawk* heat-seeking missiles, the four *warpath* radar-guided missiles, and the two machine guns slung under his wing.

He looked back out the windshield. The Island was coming up already. Red Cloud leveled out his Eagle at 10,000 feet and throttled back the engines to 50 percent—just enough to maintain cruising speed. He could see the skyscrapers silhouetted against the early morning sky. Photography would be tricky in this light; shadows would be black pools that could hide anything.

"Let's make a sunwise circuit," he said. That would bring them close to Central Park first, maybe before the palefaces could scramble their own fighters into the air.

"Sounds good." Sitting Bull backed off to give them some maneuvering distance.

The two Eagles arrowed toward the Island. The palefaces called it Manhattan, but to the Indians it was simply the Island. Thirteen miles long, barely two miles wide, bought for all of $24 worth of beads and red cloth over two centuries ago; the paleface colony had been the tail that wagged the North American dog ever since. When Red Cloud had been a kid on the plains he'd heard so many tales of the place that he'd mistaken Greenland for it when he'd first looked at a globe. He'd been insulted to learn its true size. Insulted and alarmed; he'd shuddered to think how much trouble the palefaces could have caused if his ancestors hadn't limited them to their one legitimate purchase, and he'd vowed that day to join the Iriquois Federation's intertribal peacekeeping force to help keep them in their place.

More than once he'd wondered why his people didn't just wipe them out once and for all, like they'd done to the other colonies, but he always came back to the same answer. The palefaces had stolen their other land, but they'd bought the Island fair and square. It was *their* land, and if the Indians were going to insist that the rest of the continent was Indian land, then they had to honor the paleface's right of ownership as well.

But no one had to like it.

The skyscrapers grew until the tallest one—the Plymouth building—disappeared below the Eagle's nose. Red Cloud knew from experience that he was less than a mile from the territorial boundary. "Begin circuit," he said, pushing his control stick to the left. The plane responded instantly with a hard left bank; he let it go to a full 90

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

degrees, then pulled back on the stick, the gees shoving him deep into his seat. He kept an eye on the Hackensack River, climbing upward out his left window, and when he was heading roughly parallel with it he banked right until he was flying level again. A quick roll confirmed his position: The Hudson was directly below him, and the Island just to his right. The tallest skyscrapers were already receding behind.

"Start shooting," he said, triggering the high-resolution camera in his right wingtip.

"Rolling," Sitting Bull said.

Cameras whirring, they flew up the length of the Island, pulled more hard gees at the northern end, and flew back down over the East River. Red Cloud tried to spot the activity in Central Park that might be causing interest back at base, but he couldn't distinguish anything at this distance.

His earphones pinged. Two green dots glowed on the right edge of his radar screen.

"Bogeys at four," Sitting Bull warned.

"I see 'em."

"Do you have pictures yet?" control asked.

"One pass, both sides," Red Cloud answered.

"Then return to base immediately. Do not confront paleface fighters."

"Acknowledged," said Red Cloud.

"Damn," said Sitting Bull.

"Don't go looking for trouble," Red Cloud reminded him. "You'll get it soon enough in this business." They flew a few seconds in silence, then he said, "But we might as well let them know we were here." He reached forward and flipped a switch on the far right of the control console, a switch he'd installed himself. Just in back of the right engine, a pressurized cannister sprayed dye into the hot exhaust. Red Cloud shoved the throttles all the way forward and his Eagle leaped ahead, leaving a streak of red smoke behind. On the east side of the Island, with the Sun rising behind it, it would be visible from every building.

Sitting Bull's signature—written in alternating dashes of white smoke from both engines—joined Red Cloud's as they punched through the sound barrier and left the frustrated paleface pilots behind.

Brave Joseph caught up with them at lunch. "Eat light," he told them, sitting down just as they began their meal. "You're going back to the Island, and this time you get what you've been asking for, kid." He punched Sitting Bull on the shoulder as Sitting Bull's eyes lit up with excitement. "That's right, you're cleared for airspace violation. Straight over Central Park. One pass east to west, you first with Red Cloud covering your tail, then the both of you get the hell back to base. We'll have fifty planes scrambled the moment you cross the Island; let them take care of the palefaces. We want you two back here intact with photos."

"Photos of what?" Red Cloud asked. "What's going on in there?"

"Looks like the palefaces are building missile silos. We want to make sure before we scream treaty violation."

"Missile silos," Red Cloud said quietly. "There's no way they can call missiles defensive weapons."

"They can call 'em anything they

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

want, once they get 'em in place," Joseph said. "If they get first strike capability, they'll have us by the throats."

Red Cloud closed his eyes. The image of mushroom clouds rising all across the nation waited right there behind his eyelids. The palefaces had already used nuclear bombs in their war against the Turks; only a fool would suppose they wouldn't do the same to the Indians if given the chance.

He pushed his food away. It would be no trouble to eat light; he'd lost his appetite completely.

They came in over Long Island, only fifty feet off the deck, dodging treetops in their effort to stay below paleface radar. At the last moment they jinked northeast, popped up to 2,000 feet, and arrowed straight for Central Park, cameras running.

Their own radar screens filled immediately with the ping of two contacts, one north of their target, one south.

"The bastards were already in the air," Sitting Bull muttered.

Red Cloud waited for a second sweep. Both dots moved; the northward one was headed away from the park, but the southward one toward it. They were evidently flying patrol around the Island.

"Looks like we'll only have to deal with one," Red Cloud said. He looked at the digital readout below his radar screen. "He's at 5,000. You stay low and go for the pictures; I'll keep him high."

"Got it."

Red Cloud pulled back on the stick and shouted his battle cry: "*Geronimo!*" Seconds later he crossed 5,000 feet, rose to 6,000, and veered left on a course that would put him behind the paleface plane. He didn't expect that to last long, and it didn't; the paleface immediately rolled hard over and came straight for him.

Which was right where Red Cloud wanted him. As the two planes flew toward one another, Sitting Bull pushed his throttles into afterburner and sped on toward Central Park unhindered.

Red Cloud waited impatiently for the distance to close, his finger hovering over the Master Arm switch. He didn't want to go offensive unless the paleface did, but he knew a moment's hesitation could lose him the fight, if fight it would be, even though his weapons were better than the paleface's. The Indians had finally pulled ahead in the long technology race with their enemies, but superior armament didn't always win battles. The Aztecs had beat Cortez with spears and bows, after all.

He waited, waited, waited, then luck or instinct or the Great Spirit Wakantanka told him to jink left and dive, just as the radar lock warning howled in his earphones and the paleface fired a missile. The missile arced downward after him, but the angle was too steep for it; Red Cloud shot past below it with a hundred yards to spare. He reversed his turn and jammed the throttles forward, itching to complete the loop and fire one of his own missiles at the paleface—or at least one of the miniature non-explosive coup sticks—but he followed orders instead, turning back toward the Park while the paleface frantically turned to pursue him. The missile, its radar lock lost, sped on toward the ground

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

until the paleface pilot detonated it by remote.

"Camera rolling," Sitting Bull said. "Crossing Central Park."

"I'm right behind you." Red Cloud aimed for a spot a little to the south of Sitting Bull's path, started his cameras, and made his own pass over the park. He kept his eyes on the radar screen, but the paleface pilot who'd shot at him was just completing his turn, miles back, and the other pilot was flying an intercept that would put him well into Indian territory before he made contact.

It took the speeding planes only a few seconds to reach the Hudson. "Drop armament," Red Cloud said, pushing his panic button. His missiles, wing tanks, and belly tank dropped away, reducing the Eagle's air resistance. Sitting Bull did the same, and both planes shot toward home base at top speed, their smoke signatures streaming out behind them.

The palefaces pursued them, of course, but with loaded planes they had no hope of catching up, and within a few more miles an entire squadron of Eagles rose up out of the west and chased them back to their island. Red Cloud grinned at the radio traffic:

"Hey, Red Cloud; you scared this guy's hair white!"

"It isn't white; it's blonde."

"So it is. Hey, I bet this is that hotshot new guy we heard about. The one who—"

"Look out! Missile!"

"I'm clear."

"Trigger-happy bastard. Maybe we should teach him a lesson."

"Good idea."

"I'm on him. Arming the stick. Targeting . . . locked. Stick away."

"Look at 'im dodge! Forget it, buddy; you're outnumbered."

"Hah, hit 'im right on the canopy. I count coup, Yellow Hair."

"Yee-ha! My turn!"

A scant thirty minutes later, Brave Joseph showed them the pictures. "They're missile silos, all right," he said, pointing at a half dozen buildings clustered together near the middle of the park. "From the side they look like basic apartment complexes, but when you look down from above you can see the launch tubes inside. We count ten per building. That means sixty missiles, and if they've figured how to build multiple warheads, that could mean first strike capability to as many as six hundred separate targets."

"So what're we going to do about it?" Sitting Bull asked.

"Tecumseh's arranging to meet with Lee right now. He'll threaten to blockade the Island if they don't dismantle the silos. Trouble is, we think they've already got this one operational." Joseph pointed at the southernmost building.

"You think they'd actually launch?" Red Cloud asked. "We'd blow the Island off the map, and most of Europe too, if they did."

"Who knows what those crazy palefaces would do? They don't fight like civilized people."

"I say we take 'em out before they try it," Sitting Bull said.

"That's not our decision. Tecumseh's the chief."

"Yeah, well, he's going to be chief

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

of a bunch of radioactive braves if he decides wrong." Sitting Bull looked down at the photographs again. "I think we ought to scalp the bastards once and for all, and do it now."

Joseph shook his head. "We'll try diplomacy first."

"Diplomacy." Sitting Bull spat. "To a paleface, diplomacy is just another word for a stab in the back."

The hours passed slowly. Red Cloud watched the ground crew re-arming his Eagle and wondered if these missiles would wind up ditched in the Hudson like the others, or if they would find human targets this time instead. A slow anger had been building in him all afternoon, to the point where he wasn't sure which he preferred.

"We're going back," a voice said. It took him a moment to realize it was real. Red Cloud turned to see Sitting Bull grinning in anticipation, and Brave Joseph beside him wearing a more somber expression.

"I take it the meeting didn't go well," Red Cloud said.

Brave Joseph shook his head. "When Tecumseh told Lee we'd blockade the Island, all hell broke loose. Everybody in the meeting room started shouting at once, until Lee took off his shoe and banged it on the table and out-shouted everyone."

"What'd he say?"

"He said, 'We will bury you.' "

" 'We will bury you?' " Red Cloud could hardly believe his ears.

Joseph nodded. "That's right."

"Wonderful. So when are we making the raid?"

"As soon as your planes are ready. You two will make the actual run; we'll have a dozen other planes ahead of you for a lure."

Sitting Bull smacked fist into palm. "We'll get the bastards."

"*Just* the missile silos," Joseph cautioned him. "We don't want any unnecessary loss of life. We want to come out of this looking clean as spring water to the rest of the world, so think of this as a surgical strike, not a bombing run."

"Gotcha."

Red Cloud nodded, feeling adrenaline surge through his blood again. A "surgical strike" on the Island. He'd known this moment was coming, known it since the day he'd left the plains to join the peacekeeping forces. Standing, he reached out and slapped his wing man on the shoulder. "Let's do it," he said.

The Manhattan skyline once again loomed before them; this time higher than ever. They were approaching from the south, over the bay, but only a dozen feet or so above the water. Ahead of them flew the lure: an even dozen planes whose pilots would engage the palefaces and draw them away from the true action. It was an old trick, but the palefaces never seemed to learn; they were all too eager to get themselves an "Injun."

Sure enough, as the squadron approached the southern end of the Island, a swarm of paleface fighters swooped downriver toward them. The Indians accelerated to attack speed, banked hard right, and led the chase east over Long Island. Within a minute, Red Cloud's radar screen was clear.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

But just in case it wasn't as clear as it looked, they had another plan. . . .

The buildings drew closer. Red Cloud climbed a couple hundred feet, but he was still well below even the average-sized ones. "Drop behind and watch your wingtips," he said as the twin towers of the Roanoke Memorial reached out to swat them down. *"Geronimo!"* he shouted, nervously eyeing the gap between them, but just when he was sure the plane wouldn't fit, the buildings seemed to move aside and he shot through like a spit watermelon seed. A jumble of older streets rushed by below, then 5th Avenue stretched out before him, leading straight to the target. Red Cloud shoved the throttles forward and streaked toward it at Mach one, windows no doubt shattering in his wake.

A loud ping in his headphones warned him of another aircraft. He glanced at the radar screen, saw that the trace was dead ahead, but when he looked up he saw only the street and a stockade of buildings flashing by. The paleface had ducked down another street.

"Go evasive step one," Red Cloud said. *"I think we're about to be surprised."*

"Evasive one," said Sitting Bull.

Red Cloud pulled back on the stick, banked, and rolled over the top of the block to drop down into the Amerigo's Avenue canyon. Before the buildings separated them, he saw Sitting Bull doing the same in the opposite direction.

Seconds later a blood-curdling yell came over the radio. "Yeow! I just about clipped his tail. The bastard's on Madison!"

"Evasive two," Red Cloud said, rolling left and high again, but this time he continued the bank and dropped down over an east-west street. His radar pinged again on the way over the top; the paleface was above the skyline, too, no doubt turning to follow.

Red Cloud flew a few blocks, then popped up and over and down to head north again, toward Central Park. His radar pinged at him again. For a moment he hesitated, wondering whether to try more evasive maneuvers, but at last he decided to stay low and hope the paleface would pick the wrong street. "Making my run," he said.

"Me too," said Sitting Bull. "Coming up behind you."

The last mile or so passed in a descending blur, the buildings growing shorter as he neared the Park. Red Cloud set his targeting radar to its narrowest field and searched for the "apartment complex" housing the missiles, but when Sitting Bull shouted, "Look out! He's on you!" he abandoned the search and banked hard right. His headphones squealed with the enemy radar warning, but not with the intensity that would indicate a weapons lock-on.

"I'm on him," Sitting Bull said, and seconds later he shouted, *"Tomahawk away!"*

Red Cloud craned his neck to see if he could spot the paleface by eye, and saw him just as the missile hit. Paleface planes were tough, he'd give them that; the right engine erupted in flame, but the plane stayed in one piece, trailing thick smoke as it dropped out of the sky. The pilot even seemed to have some control over it.

"He's going for the lake," Sitting Bull said.

"Let him go. Let's take out the silos

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

and go home." Red Cloud once again scanned for targets, locked onto the proper building, and fired a radar-guided *warpath* at it. When the rocket hit, nothing happened for a second; then the explosion reached the missiles inside and the whole thing erupted in a ball of flame.

Sitting Bull's rocket took out the building next to it. Unfinished, it didn't hold any missiles, but the concussion brought it down just as effectively all the same. Red Cloud retargeted and fired again at the next building in line, and at the next. Sitting Bull took out the last two.

They circled the paleface on their way out. He rocked back and forth beneath his parachute, long yellow hair spilling out from beneath his helmet. He held his right arm extended toward them, and Red Cloud could see tiny flashes from his service revolver.

Sitting Bull saw it, too. "Boy, that guy doesn't know when to give up, does he?"

Red Cloud laughed. "Palefaces never do." He banked away from the downed pilot and headed for home, triggering the switch that would draw his signature across the sky as he did so. Watching Sitting Bull draw his own signature beside him, he said, "Let me tell you, kid, we've borrowed a lot of things from the palefaces—their technology, some of their ways of life—but the sum total of what we've actually *learned* from them can be stated in one sentence." He paused, amusedly aware that they were flying directly into the autumn sunset.

"What? Shoot first, ask questions later?" Sitting Bull asked.

"Nope. Try again."

"Walk softly, but carry a big stick?"

"Closer." Red Cloud grinned, imagining the next step in the technology war. The palefaces would probably try longer-range missiles, so they could launch from Europe. The Indians would have to develop them, too, as well as better surveillance techniques to watch over the situation on the other side of the world. That meant either strengthening the navy to provide a base of operations, or using the improved missile technology in a new way: to go for the high ground. Red Cloud looked out the canopy, straight up. Was that where his future lay?

"So what's the line, oh fount of wisdom?"

"Huh? Oh, that." Red Cloud quoted the Aztec, Montezuma, who'd first warned of the paleface threat: " 'The price of freedom is eternal vigilance.' " ■

Customer Service or Subscriber Assistance
Please direct all changes of address
and subscription questions to:
Analog Science Fiction / Science Fact
P.O. Box 7061
Red Oak, IA 51591

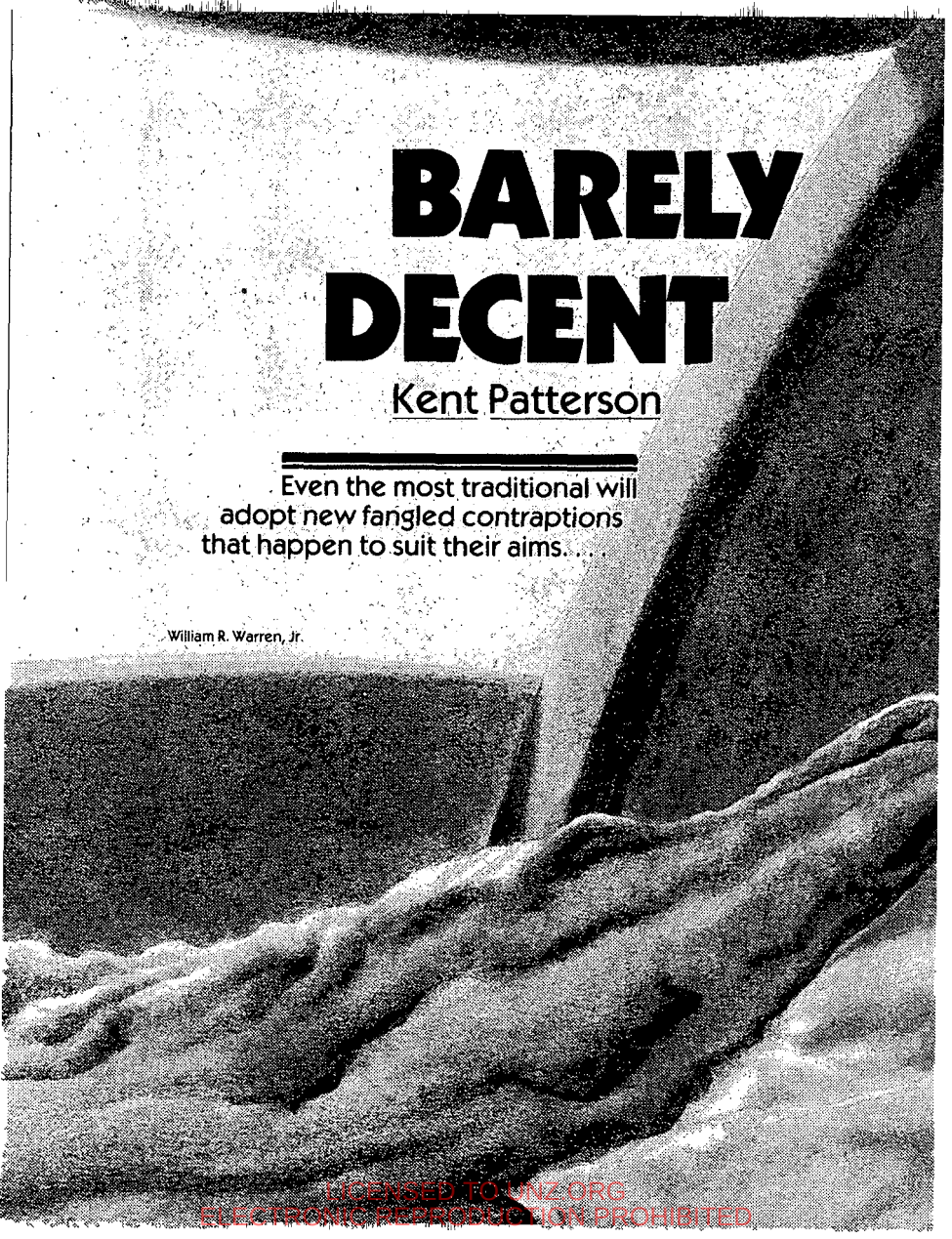
LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

BARELY DECENT

Kent Patterson

Even the most traditional will adopt new fangled contraptions that happen to suit their aims. . . .

William R. Warren, Jr.



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

When the snooze alarm rang, Celeste tried to roll over to turn it off, but she couldn't because her long skirts tangled up in the sheets and resisted every movement. That snapped her awake. When she had gone to bed last night, she had worn nothing but the "Love Whispers," a nightie she'd designed specifically not to resist anything. She threw back the covers.

She was wearing a long, gray-green granny dress which reached from her chin to her ankles. The sheets were in rags. She leaped out of bed and looked in her full-length mirror. The dress was utterly shapeless. All that dieting and aerobicise to keep her willowy figure willowy, and suddenly she looked like a deflated blimp. First time in her life she'd ever woken up wearing more than when she'd gone to bed.

It had to be a ghastly dream. Maybe last night she'd worked too late in her rock garden. Wildly, she looked around the bedroom. The mirror, her antique oak dresser, her cosmetic bottles—everything was exactly in place. Even the faint aroma of L'Amour du Demi Monde perfume was reassuring.

Ted! A practical joke! He'd been gone to work for two hours, but maybe he'd sneaked this hideous thing on her—no. Why a joke if he wasn't around to laugh? Besides, she couldn't imagine Ted ever sneaking clothes *on* to a girl.

The phone rang. It was Hermione, her secretary at the Barely Decent Design Studio, and she sounded as hysterical as Celeste felt.

"Turn your TV to the Reverend Theron's Modest Majority Show, Channel 6." Hermione screamed.

"Hermione! I'm not interested in politics just now. You can't guess what horrible thing happened—" Celeste said.

"You woke up in a granny dress like lots of other women all over town. All of them wearing our Love Whispers line. Turn on the Reverend Theron's Modest Majority show." The phone went silent.

Worse and worse. As she turned on the TV, Celeste stripped off the shapeless dress, only to discover she was wearing still more shapeless underwear. As a professional designer of the finest in lingerie, she felt insulted. This stuff was cut to a pattern not worn by any self-respecting woman since the days of the Crusades. She stripped it off, too. It wasn't easy.

" . . . worse than harlots, are those who cater to harlotry, who revel in casting a scum of fashion over the rotting flesh of whoredom," bellowed the Reverend Theron. His round oily face filled the TV screen. Sweat beads on his forehead glittered in the studio lights. A telephone number appeared on the screen over his chin. In the background, a huge "Reverend Theron for President" poster reminded the ungodly that the good Reverend's power was more than merely spiritual.

He held up the Barely Decent company logo. Celeste drew in her breath sharply. That slime ball. His Modest Majority had already driven her spring line of micro-teddies virtually underground. Now he was attacking her, or the company she had created and nur-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

tured, which amounted to the same thing.

"It's filth in the name of fashion," shouted the Reverend Theron. "A modest America is a moral America. Ah, brothers and sisters, listen to the ads for the company that calls itself Barely Decent, which, let me tell you, is the only honest line this company gives. Imagine your young daughters, tender in years, and tender in impressions, listening to this."

He read from the Barely Decent catalog. " 'Eyes right, and that right is you. Catch every eye on the beach with swimsuits by Barely Decent.' Brothers, can you imagine a more clever trap for the vanity and frailty of a young woman? But there's worse. Much worse." He held up a solemn hand and read. "The Love Whispers No-nightie Nightie. If this fabric could whisper, it would whisper of love. You slip it on. He'll slip it off."

Anger surged through Celeste. She'd written that ad herself, and agonized over every word. She reached for the knob to snap the Reverend Theron off, but then noticed her arm. There was a long sleeve creeping down her wrist. That awful underwear tightened around her waist.

The hideous dress was growing back in place! Anger turned to fear. Celeste clutched at the dress, ripping off pieces and flinging them to the floor. She sprinted into her home studio and snatched up her shears, slashing at the fabric which crept over her body like grass covering a grave.

The dress kept growing back. She looked closely at where the shears had slashed through the skirt. She had to be crazy. But even as she watched, the cloth grew.

"But God will not be mocked!" The Reverend Theron's sermon echoed through Celeste's panic like a warning bell. "And, through the miracles of modern science, God has sent the littlest and humblest of his creatures to cover the naked from the lusting eye of the unregenerate."

Suddenly Celeste knew that somehow this horrid dress was Theron's fault. She ran back into the bedroom. Sure enough, a woman was modeling exactly the same dress. She carried a glowing laser poster advertising the Modest Majority Miss Christian America Pageant to be held on the Reverend's show. Just one week before elections, Celeste noticed.

"Consider the silkworm, how mighty in spirit," said the Reverend. The screen switched to a scene of silkworms spinning cocoons. "Now, praise God, we have distilled the essence of the silkworm into a machine so tiny it cannot be seen. Amen. But this worm is not merely a creature of chance. For each and every one of these tiny machines has a computer programmed to enforce modesty, praise the Lord."

The audience praised. Celeste stood dumbfounded.

"And now, we stand upon a mountain top and lift up our voices to all the world. God will not be mocked by the indecent or the 'Barely Decent.' " Behind the Reverend, a mass chorus launched into *Glory, Glory*. The music swelled, the camera moved in until the entire screen showed only his face and the inevitable phone number.

"That hypocrite. That, that . . . " None of the words of conventional

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

abuse seemed adequate. Finally Celeste grabbed the phone and got Hermione on her private line. "Things are crazy here," Hermione whimpered. "Customers are yelling, and the phone's just coming off the hook, and—"

"Shut up, Hermione. Stop sniveling. Find me someone who knows something about those damned artificial silkworms. Make sure they're not connected to the Reverend Theron. I'm calling my lawyer." She paused. "Load for bear, because we're going preacher hunting."

Celeste called her lawyer, fuming as she went through the usual obstacle course of receptionists. The lawyer promised to seek an injunction.

"'Damn it, Suzanne," Celeste snapped. "An injunction? You're talking months. By then Barely Decent will be history."

"Nevertheless—"

Celeste hung up.

While waiting for Hermione's phone call, Celeste examined her dress. Years of experience with fabrics had not prepared her for this one. It was slick, coarse, and stiff. Calling it silk was obviously one of the Reverend's little exaggerations. The fabric grew, weaving itself as from an invisible loom. Not colorfast. She rubbed some of it between sheets of tissue paper. The paper turned gray.

She imagined those tiny computerized factories working away, creating thread and breeding like rabbits. She wondered what they ate. Even if they weren't living creatures, they would have to consume something.

At last Hermione called, giving her the address of an expert on nano-synthesis.

Celeste stepped outside. Her dress swirled after her. She stared at the obscene thing. It was the very antithesis of everything Celeste stood for in the world of design. Worse. This dress denied her own body. It hid her as if she were something to be smuggled through customs. It was an invasion, a sort of anti-sexual rape.

She half expected the scientist to be an absentminded elderly gentlemen with a long beard and a white coat. Robert Whicher turned out to be thirty, with a hand-knit sweater and off-white slacks that stopped just short of working, fashion-wise. She looked up and down his frame with a professional eye. Definitely a fixer-upper.

After two hours of testing, he was just as discouraging as any old bearded duffer could have been.

"I'll do my very best to help you," he said. "After all, the good Reverend and his anti-science crusades aren't good for my profession, either. But I don't know how much I can do," he said. "It's not that I don't know what's going on. Theron didn't invent these things; he bought them. But the programming has been changed. These bugs are intelligent, at least in a limited sort of way. True, all they know is making granny dresses, but that they do know. You don't have to be Einstein to make a granny dress."

"How'd they get on my nightgown?"

"Well, since they're all over town, I'd say someone just walked into the stores and sprinkled the stock. Wouldn't take much. A single drop would infect lots of fabric."

"There's not much fabric in Love

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Whispers." She thought for a few seconds.

"Why can't I wash them off?"

"Too small. You can wash off some of the actual workers. But a few breeders will always remain in the pores of your skin. They breed new ones in minutes. You can't keep washing all the time."

"So how about some chemical to poison them?"

"A good possibility. Sulfuric acid would do nicely, except of course it wouldn't do much good for your complexion."

"Starve them?"

"Too risky. They are programmed to consume oxygen, carbon, hydrogen, silicon directly, atom by atom. Plenty of that stuff around. But if they can't get it from the atmosphere, dust, other cloth, and the like, they might take it from your skin."

"Eat my skin? To make this abomination?" She raised the long skirt. "Horrible!"

"Yes, horrible. But incredible technology." He saw the look on her face. "Oh, sorry."

Celeste grabbed her purse and stormed out.

She strode down the street with the long skirt swinging from her waist. At newsstands, Reverend Theron's oily face was on nearly every magazine cover. Headlines screamed "Theron Inches Ahead: Polls Show 2 Percent Lead Building."

My God, Celeste thought. The man who hates me and hates my business may become President of the United States. I'm becoming an oppressed minority in my own country, and my chosen profession will be outlawed.

When she got to the Barely Decent main office, she was appalled.

"It's a madhouse." Hermione cried. "Every model we have is in a granny dress. There's a thousand women calling us."

"Tell them to call the Rev."

"Every distributor we've got is canceling orders."

Celeste's blood ran cold. "How bad is it?"

"We won't sell so much as a pair of undies."

Dazed, Celeste leaned against the wall. Just twenty-four hours ago, the fall line was her greatest hit ever. With one touch of his magic wand, the Rev turned a booming young fashion house into a financial Sahara.

No sense staying in the disaster area. She hailed a cab and went home.

Reporters! The lawn was covered with them. Even her carefully raked Japanese rock garden was being trampled into nothingness.

No way out of it. Thank God Ted had come home.

"How does it feel to be called 'harlot' and 'strumpet'?" shouted a woman from Christ First! Network, holding a mini-cam in her face.

"Do you feel God's wrath?" shouted a man from One Way Open Bible Cable.

In the mass, Celeste saw Wayne Nelson from Connections Network. She knew she could trust him to show some objectivity.

"I will make only one statement." She looked directly into Wayne's face, ignoring the others. "I have no quarrel with any woman who chooses of her

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

own free will to wear one of these things. She knows what she is hiding. But I am not ashamed of my sex, my body, or my womanhood."

She thought that sounded rather noble.

"I am sexual, I am not a sex object. I play many roles. So does every human being. You need to be something more than a doctor or a lawyer." Through the window, she could see Ted with his hand on the front doorknob. Great. A quick escape. "There are times when even an accountant should be Barely Decent. And hang the so-called Reverend Theron."

She sprinted for the door, Ted opened it, she rushed through and slammed it behind her, catching her long skirts. She slipped out of the dress. It wasn't as if she couldn't get another.

"Ted, they're killing me."

With his balding head, stooped posture, and his utter refusal to wear anything not guaranteed to be twenty years out of style, Ted was not the male ideal pictured in the Barely Decent catalog. But right now he'd never looked so good.

She buried her face against his shoulder. He hugged her, made "there, there" noises, and fondled her bottom. At least she thought he fondled her bottom. With her underwear, she couldn't be sure.

It took three stiff drinks and an excellent cry before she felt anything like a human being. Ted, for once, was totally supportive.

"Your scientist friend called. He said he'd be working night and day to help."

"Ted, my whole fall line is gone. I can't pay him. I'll be lucky to pay Hermione and studio rent."

"I'll pay him." He put his hand under her chin and lifted her face. "Hon, this is *our* battle. If the Rev calls you a whore, what is he calling the man who sleeps with you? We'll make him eat those words, or neither of us will ever be able to face ourselves again."

Five o'clock was the trial by TV. Wayne Nelson was exactly as she expected, showing her as well as he could.

But she had fatally underestimated the unscrupulousness of the Rev's media machine. She'd made a monster mistake in speaking at all.

"Hang the so-called Reverend Theron," she saw herself saying, her face on the screen shaded so that she looked like Jack the Ripper's meaner sister. "Even accountants should be Barely Decent."

She remembered something she'd heard Wayne Nelson say. Direct quotes can be the cruelest form of lying. Now she knew what he meant.

"That damned Theron's out to ruin me, Ted." she said. "And he's doing it."

Ted made an inarticulate noise, but she wasn't listening anyway.

"He's not going to let me work anymore." A tear slid down one cheek. "It's all I ever wanted to do. Even when I was a little girl, all the other girls used to babble about becoming physicists and lawyers, but what I wanted to do was to make beautiful clothes. I used to dress up my kitten, when I could make him hold still."

The drinks were coming home. "And now I'm trapped in this, this tent." She grabbed her dress, pulling at the fabric.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

That night Ted tried to make love to her. It was hideous. Celeste thought of herself as an especially sexy woman, but she simply could not be rushed. She needed time, time to be petted and fondled. She needed soft fabric against her skin, and Ted's strong, warm hands unwrapping her like the gift of her love was a precious thing. But the dress and the underwear kept coming back. There was no time. She pitied those poor Victorian women with all their pounds of skirts and petticoats. No wonder they'd thought of sex as a time to close your eyes and think of England.

That hideous dress ruined everything. Feeling hot, sweaty, simultaneously aroused and disgusted, she left the bed and locked herself into her design studio. She stared out the window until the first hint of dawn touched the eastern sky. The Reverend had destroyed her business, her profession, and now he was ruining her relationship with Ted.

There was only one thing left to do. However much it hurt, she would have to go see the Reverend Theron. She smiled bitterly. What fabric would a designer choose for a white flag?

"You utterly mistake our position, Miss Celeste," said the Reverend Theron. Celeste let the "Miss" pass. He lolled behind his desk, a monster of exotic woods with an inlaid thin gold cross. Celeste couldn't guess how much the desk cost, but she did know clothes. The designer blue suit he wore would support a family of four for six months. "I *personally* have nothing against you." He smiled. He always smiled. "But *this*," he held up one meaty hand. Diamonds flashed from rings on every finger, "is merely a poor instrument in the hands of God. I can do nothing but that which God wills. Everything I say is the word of God."

Celeste suppressed an intense desire to vomit on the Rev's handmade Oriental rug. "So you will do nothing for me?"

"Ah, my staff tells me your company has contributed very heavily to my presidential opponent."

So that's it, thought Celeste. The bastard must have spies at every keyhole. "If I were to give a very large contribution to your party?"

"God's party."

"God's party, then. Do you feel perhaps you might stop this attack on me?"

"God's always forgiving the repentant sinner. Provided he's genuinely sincere."

"How sincere would I have to be?"

The smile became sultry.

"Do you know of the biblical tithe, Miss Celeste."

"What! Ten percent of all I make?"

"Before taxes."

"But my profit margin's not that high. I only . . ." Celeste's voice trailed off as the Reverend Theron heaved his bulk from behind his desk. Mounds of fat under his expensive suit rolled like waves on a water bed. From his TV show, Celeste would never have guessed he was so fat. Talk about a scum of fashion on vile flesh.

"You see, Miss, there are more ways to prove sincerity than with money." He came around the desk toward her, his diamonds flickering like marker lights. "This tiny device"—he held out a remote controller—"has a special code which controls the silkworms in

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

your dress. I can turn them off this easily." He pressed a button. As if it were suddenly rotten, the fabric of her dress dropped off.

Then her bra went the way of her dress. For the first time in days, her breasts were bare.

"You are beautiful," the Rev smirked. "I can hate the sin but love the sinner." He clutched at her underpants.

Just as they had taught in her women's self-defense class, she brought her hand up to hit at his crotch. He blocked her hand, but he did back off.

Celeste jumped up and sprinted for the door, trailing bits of the last fragments of her clothes as she ran.

"You can't run away from the wrath of God," the Rev bellowed. He pointed the remote at her and pressed the button. She ran through the door and slammed it behind her. The receptionist in the outer office hardly looked up. She's used to naked women running from the Rev's office, Celeste thought. What an oily, horny, hypocrite that scum sucker is. Far better an honest lecher than a pretended saint.

It took Celeste twenty minutes to find her way through the Reverend's mansion and back to the street. By that time, her granny dress was back in all its drabness. As a fashion designer, she would have been far less embarrassed to have walked down the street nude.

When she got home Robert Whicher, the scientist, and Ted were in a council of war. She joined in, telling Whicher about the remote.

"Yeah. I know the type. Not much different than what you've got on your TV. Only with some kind of special entry code."

"Couldn't we make one?" Ted asked.

"Buy one for a few bucks. But we don't know the code number."

"Couldn't we break the code?"

"Not in just one lifetime."

Dejectedly, Celeste rubbed the fabric of her skirt between her fingers.

"This garbage isn't really silk."

"Yes, the Rev lies when the truth would sound better. Chemically, it's plastic. That whole design is based on one which was designed to spin cheap plastic optical fibers. Basically, all his gang of tech school dropouts did was take one gadget which created optic fibers, tie it on the back of another one which hides in human skin pores, and patch up the programming. Shit poor kludge of a job, if you ask me."

"Good enough, though. What I don't understand is where the material to make the cloth comes from," said Ted.

"From the air, mostly. The plastic is two-thirds oxygen by weight. Then it eats other cloths. That's what happened to your bedsheets. I don't know where it gets the silicon." He looked at Celeste. "You ever play in the sand?"

"No, of course not." She thought for a second. "Yes! My Japanese rock garden!"

"OK. It only needs a few grams of silicon; you probably track that much into the house. I bet that's why it grows so fast on you. With the other women, it has to wait until it gets enough silicon from household dust and dirt."

"Why is it colored?" She held up her stained fingers. "Where did this dye come from, and why is it always gray-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

green?''

''It isn't dye. It's a reflective powder.''

''What's that?''

''Optical plastic is so transparent that it's hard to see. Makes it a bitch to work with. So you spray it with some goop to make it reflect light. Regular dyes won't stick, so the goop's got to be a superfine powder which sticks by molecular attraction. Grind it to fit a certain light wave, you get that color. That's why all these dresses are gray-green. This particular powder reflects light waves somewhere in the yellow-green range around 500 nanometers. All other frequencies of light go right on through. Amazing stuff.''

After Robert left, Ted made drinks and sat unsociably far across the room. She knew he didn't mean to snub her, but to his mind she'd rejected him. Not from her own choice, but she had. There was a wall growing between them. In spite of all she could do, every day it grew a little thicker. She missed the sex, but much more she missed the touching, the fondling, and the cuddling. She smiled bitterly. She'd give a million for one of Ted's patented back massages. They only started with the back.

Making up her mind, she got up and went to him, hugging him, sitting on his lap. He responded with the awkwardness of a junior high school boy, expecting a slapped face. Through all the thickness of heavy cloth, his hands didn't feel like hands. There was no warmth in them. Finally, she got up and went to her design studio. He made no effort to follow her.

A plastic dress? It was an iron dress, a walking prison.

At seven, Celeste turned on the Reverend Theron's Modest Majority show. An act of sheer masochism, she thought, but she couldn't tear her eyes away. Fifty young women in grey-green granny dresses exactly like hers sang, danced, and in general tried their best to make it look like wearing the clothing equivalent of Alcatraz prison was the best thing since skin.

''Hallelujah, brothers and sisters,'' the Rev shouted, bouncing out from behind the wings and up to his natural place at the front of the stage. He'd dropped the expensive suit and was wearing a gray-green plastic suit. But then he had the controller, Celeste thought. The crowd roared approval and gave a standing ovation as he modeled the suit.

''A modest America is a moral America,'' he bellowed, as the chorus piped up ''Onward Christian Soldiers.'' A spotlight picked him out of the crowd. ''And if you think you're seeing something tonight, tune in tomorrow and see what true beauty is really all about at our Miss Christian America Pageant.'' Squealing and jumping, the young women in the background went into a frenzy. Powerful spotlights played over them.

Celeste sat with her mouth open. She remembered a demonstration on color she'd seen at design school. There was the solution right in front of her eyes.

''Ted, Ted,'' she ran shouting into his room. ''Get downtown immediately and get three tickets to the Miss Christian America Beauty Pageant.'' He looked at her as if she had lost her mind. ''Now! I'll explain later.'' He left. Then she dialed Robert.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

* * *

The Modest Majority auditorium was packed. To one side of the stage, a massive pipe organ and a five hundred member choir blasted out "Power in the Blood." God's Solid Gold Hits, Celeste thought. The crowd pressed forward inches at a time. Fully half of the women and many of the men were dressed in gray-green. So much the better, thought Celeste. Three more people in gray-green will be invisible. She squeezed Ted's hand. "Be careful, hon. Security's got to be tight."

"Thanks. I can't believe I'm sneaking around a Christian beauty pageant."

"No sweat." Robert said. "I've got friends in low places. I know half the techies working here. Got your pager, Celeste?"

"Of course. I'd rather have one of Theron's remotes."

"If this works, he'll be glad to give you one. Anyway, just press the red button when you want to buzz me and Ted for action. Come on, Ted. We've got to get upstairs while my man is still on duty."

Celeste watched them go. Dressed in gray-green, it was astonishing how rapidly they melted into the gray-green crowd. Taking her seat, she placed her purse demurely on her lap, and pretended to be engrossed in the music, which, to tell the truth, had become so loud as to be impossible to ignore.

"Hallelujah, brothers and sisters!" The Rev bounced about in his gray-green suit. The already deafening music swelled to a new high and switched suddenly to the "Star Spangled Banner." Everyone stood. When everyone sat, Celeste opened her purse and put her hand on the tiny pager. She would wait for exactly the right moment.

The next thirty minutes were an assault on the senses such as Celeste hadn't seen since her teeny rock concert years. Speakers bigger than bathtubs blasted the crowd. Celeste could feel the vibrations tugging at her skirt. You couldn't possibly not listen. No one stirred. Not one child giggled or whispered. At that sound level, even shouting would have made no difference. Huge colored letters, thrown on the dome ceiling with lasers, spelled out campaign slogans and the Reverend's name.

No doubt the star of the show was the Reverend Theron. He bellowed, he shouted, cried, whispered, roared. He cavorted, he jumped, he sprinted, herding the fifty young women contestants as if they were sheep. Celeste was flabbergasted that a man of his age and bulk could exert so much energy.

A dozen times she nearly punched the button. But things were never quite right.

Now the beauty contestants each had her brief moment in the sun. One by one, they minced up to the microphone, simpered a few words about true beauty abiding with Jesus, and took their place back in the line. When the fiftieth and last had her say, the entire line started jumping and bouncing like so much popcorn.

"Hallelujah!" Rev Theron shouted, throwing his arms into the air and making a most astonishing leap. He came down with a thud, his knees bending in preparation for a yet more astonishing leap.

Celeste pressed the button. Instantly

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

a pinkish spotlight caught the Reverend and he was dressed only in a blue tie and black shoes.

"Hallelujah!" Arms thrown into the sky, the Reverend leaped. Vast waves of fat rolled down his chest and stomach When he came down, his stomach looked like a surfer's paradise.

As one person, the crowd caught its breath. More spotlights came on. Now the fifty young women, wearing only high heels and fake diamond tiaras, jumped and kicked in line with all the gifts the good Lord gave them on honest display.

With one final wail from the pipe organ, the music failed. Blinded by the powerful spotlights and not realizing their situation, the Reverend and the Modest Majority contestants tried in the finest traditions of show biz to make the show go on. It did. The audience booed and whistled. A seat cushion sailed through the air and landed on stage, followed by a blizzard of more.

More pinkish lights came on. A scream in the audience notified everyone that not all the show was on stage. Like a sudden wind through a wheat field, panic surged through the crowd. Stalwart Christians who had hardly looked at their own body for ten years, much less any one else's, suddenly found themselves appearing in only that which the Lord had provided. They ran from the knowledge as if from a fire, piling up at the exits in one vast shoving, screaming, mass of humanity.

In the general confusion, Celeste dropped the pager into a trash can.

"You realize you cost me the election," said the Reverend, sitting behind his gold cross desk. "I've lost near forty points in the polls." It had been three days. Judging by his appearance, it might have been ten years. His face was gray and his eyes wandered. "You've humiliated me in front of an audience of 20,000,000 Christians. You've made my name a hiss and a byword among the chosen."

"It stinks among the unchosen, too," said Celeste. This time she'd brought Ted with her.

"What do you want?"

"Three things. First, we want the codes to get rid of these damned dresses once and for all. Second, damages for my business. Third, we want you off our backs permanently. Not another word about me, or my business."

"Out of our lives," said Ted.

"And if I don't?"

"All we did is take a little light filter set to block one set of light frequencies." Celeste pulled a disk of greenish plastic from her purse. "Block the one frequency which causes the color, all the others go right through. These filters are cheap and easy to make. So. First, we're selling our little light filter to anyone who can buy it. Imagine what your Modest Majority ladies will think when any casual stranger with a flashlight can look right through their clothes."

"We're giving a 50 percent discount to dirty-minded small boys," Ted put in.

"Second, we know you've managed to squelch all recordings of the film on your own networks. But we had Wayne Nelson attend, and he made one for the secular networks. Roll 'em, Ted."

Ted put a minivid on the gold cross

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

desk and pressed PLAY. "We call this shot 'lift up your arms to the Lord.' "

The Reverend turned his head away.

"Hey, you're going to miss your close-ups," Ted said.

"Here." The Rev turned, unlocked a drawer to his desk, and tossed over the remote. "Here's the control. The codes are on the inside of the back cover. For the damage to your business, send me the bill. And now," he thundered with a touch of the old spark, "get out of my office. May God see you in the lowest pit of hell."

Was there anything nicer than a long hot shower, thought Celeste, letting the water beat down on her face, then down her breasts and belly. She had turned off the nanoworms. She looked down at the soapy water gurgling out the drain and imagined the dead little worms or computers or whatever they were being carried out to sea.

But maybe that fabric had a use after all, she mused. You could bury tiny little lights in it, turn them on and off with a microchip. Yes. Moving little peep holes that flashed on and off. It would be sexy, eye-catching, intriguing, naughty. It would be, let's face it, barely decent. ■

IN TIMES TO COME

● Vincent Di Fate's November cover heralds a striking novella with two authors and a double meaning for its title: "Contact," by Jerry Oltion and Lee Goodloe. Contact with other intelligences is one of the most intriguing goals of space travel, but timing can be very important. Suppose when you make that contact it's on the homeworld of a species facing imminent doom because of a certain peculiarity of the star system they inhabit. Suppose further that the intelligent natives are at a stage of development where they're not at all ready to handle contact with, much less rescue by, starfaring aliens. With one exception . . .

The rest of the fiction line-up includes a novelette by Maya Kaathryn Bohnhoff, a relatively new writer who wasted no time in making herself a favorite of our readers; and another by Charles D. Eckert, that you might think of as something special for the season. Or maybe you'd rather think of it as a Civil War story. . . .

Donald F. Robertson's fact article is a follow-up to one he had here in March 1989 called "Mars: The Soviet March." One of the drawbacks of a long lead time is that anything we run risks obsolescence even before it reaches the reader. When that happens, it usually only affects small details, but this time the changes in the Soviet space program and the country that hosts it have been sudden, dramatic, and sweeping. So the time is certainly ripe for an update, titled "Commercial Space: The New Cold War."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Classified Marketplace

AN OCTOBER/91

ANALOG/ISAAC ASIMOV combination CLASSIFIED AD rate is $6.50 per word—payable in advance—($97.50 minimum). Capitalized words 40¢ per word additional. To be included in the next issue please send order and remittance to I. M. Bozoki, Classified Ad Director, DAVIS PUBLICATIONS, INC., 380 Lexington Ave., New York, N.Y. 10017.

ART

Isaac Asimov's Science Fiction Magazine Presents The Art of N. Taylor Blanchard 1992 Calendar

Order this 1992 calendar by sending a check or money order (no cash) to:

Davis Publications Calendars
380 Lexington Ave.
NY, NY 10168-0035

In the US, please include price of calendar **$9.95** (*NYC residents please add 8¼% sales tax*) plus **$2.75** for shipping and handling for the first calendar, each additional calendar add **$.50**.

In Canada, remit US dollars, include the price of the calendar plus **$4.00** for shipping and handling for the first calendar, each additional calendar **$1.75**.

ART—Cont'd

Unique Flights of Imagination

Best original fantasy, horror & science fiction artworks.

Worlds of Wonder

Video Gallery Catalog VHS cassette $20. ppd.

3421 M St N.W. Suite 327-V
Washington, D.C. 20007 (202) 298-7889

AUTHOR'S SERVICE

LOOKING for a publisher? Learn how you can have your book published, promoted, distributed. Send for free booklet. HP-5, Vantage Press, 516 W. 34th St., NY, NY 10001.

BOOKS & PERIODICALS

FREE CATALOGS of Science Fiction pulps, digests, paperbacks, hardcovers. Collections also purchased. Bowman, Box 167, Carmel, IN 46032.

100,000 science fiction and mystery paperbacks, magazines, hardcovers. Free catalogs! Pandora's, Box Z-54, Neche, ND 58265.

CATALOGS & DIRECTORIES

IF You Like Dragons, Wizards, and Fairies; send for our catalogue: The Silver Dragon, 5600 Post Road, East Greenwich, RI 02818. Dept. A.

DRAGON CATALOG

FANTASTIC variety of decorative, useful, and wearable dragon items. Full-color catalog $2.00. Dancing Dragon - ANO, 5670 West End #4, Arcata, CA 95521.

TAPES & CASSETTES

OLDTIME RADIO PROGRAMS. Great Science Fiction! Also, mysteries, comedies, westerns. Free catalogue. Carl D. Froelich, Heritage Farm, New Freedom, Pennsylvania 17349.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The Alternate View

QUANTUM TELEPHONES TO OTHER UNIVERSES, TO TIMES PAST

John G. Cramer

© 1991 by John G. Cramer

My Alternate View columns have been appearing in *Analog* every other month since the July 1984 issue. Many of my columns have been devoted to quantum mechanics, its peculiarities, and its interpretations. I've written about quantum time travel (*Analog*, April '91), about Bell's theorem and the problem of nonlocality (January '90), and about the Calcutta scheme for faster-than-light communication with K^0 mesons (September '88). I've also compared the orthodox Copenhagen interpretation with two unorthodox interpretations, with the Everett-Wheeler or "Many Worlds" interpretation (November '84), which splits the universe into alternate worlds with each quantum event, and with my own "Transactional" interpretation (November '86) which accounts for quantum behavior through wave-exchange handshakes across space-time.

In this column I want to turn once again to the weirdness of quantum mechanics (QM), but with a new twist added by recent work in "non-linear" quantum mechanics. It appears, as we shall see, that the Copenhagen interpretation has suffered a serious, possibly fatal, wound. Moreover, if the quantum world is very slightly non-linear we can test the validity of the transactional interpretation against the many-worlds interpretation using backward-in-time and inter-universe communication.

We'll start with a short review of quantum mechanics and its interpretations. Quantum mechanics is the physics theory which deals at the smallest distance scale with objects (atoms, nuclei, photons, quarks) so small that the lumpiness or *quantization* of physical variables becomes important. QM was formulated in the mid-1920s to explain the growing body of new experimental facts that didn't fit the then-standard theories of physics. Two brilliant young physicists, Werner Heisenberg and Erwin Schrödinger, invented mathematical tricks that gave valid predictions of experimental results. They worked independently, each using some combination of deep mathematical insight, intuition, and plain good luck to formulate his theory. The two theories are very different in appearance, but are, as it turns out, equivalent. Today, this mathematics is used and trusted by all physicists. The *use* of the QM procedures is clear and unambiguous, but even now, six decades after their work, the *meaning* of the QM formalism remains controversial. One often hears that "mathematics is the language of science."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Quantum mechanics demonstrates that the language may lack a proper translation.

Consider this example: a radioactive atom decays by ejecting a fast-moving electron. In the QM picture of this event a wave corresponding to the electron spreads out from the parent atom in all directions, an ever-widening spherical wave front like the ring of ripples from a stone thrown into a pond. The electron

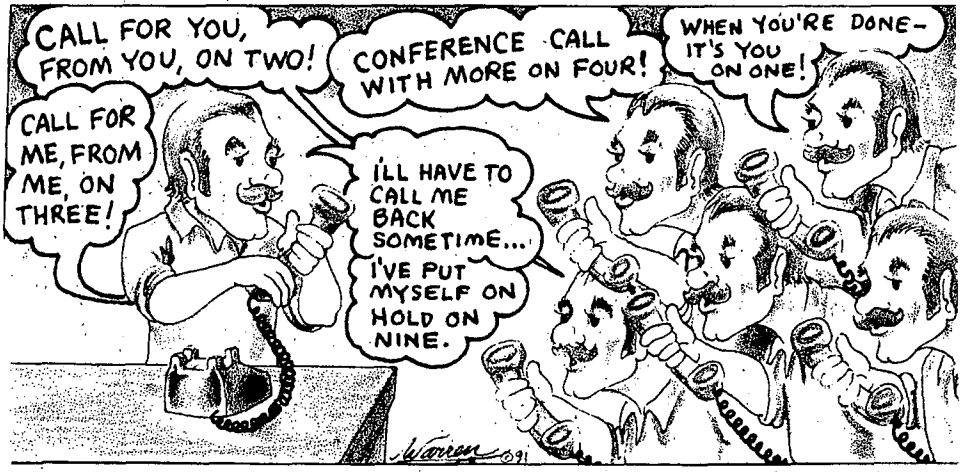

CALL FOR YOU, FROM YOU, ON TWO!
CONFERENCE CALL WITH MORE ON FOUR!
WHEN YOU'RE DONE- IT'S YOU ON ONE!
CALL FOR ME, FROM ME, ON THREE!
I'LL HAVE TO CALL ME BACK SOMETIME... I'VE PUT MYSELF ON HOLD ON NINE.
Warren '91

Illustration © 1991 by William R. Warren, Jr.

is represented by the wave and is equally present over the whole wave front. The moving electron-wave then arrives at a second atom which it hits, resulting in a measurement of the electron's position. Immediately the expanding spherical electron-wave "collapses" like a soap bubble pricked by a pin. The wave completely disappears from all of space except the immediate vicinity of the struck atom, where the electron suddenly pops into existence. The electron as an expanding wave has vanished, to be replaced by the electron as a particle. This process is called "wave function collapse." It is considered "nonlocal" because the wave function abruptly disappears from locations quite distant from the point of detection. More subtle nonlocal correlation effects are exhibited in the so-called Einsten-Podolsky-Rosen (EPR) experiments that have been used to test Bell's Theorem.

The orthodox *Copenhagen interpretation* of the mathematics of quantum mechanics is accepted by most physicists. It was invented by Niels Bohr and Werner Heisenberg in the 1920s and 1930s. In the Copenhagen view the QM mathematics is a description not of a physical event but of the *knowledge of an observer* who is watching the event.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

The observer makes a measurement and the wave function, the QM description of his state of knowledge of the system, "collapses" to a simpler form which reflects the new information gained from the measurement. In the Copenhagen view the Schrödinger equation, a wave equation relating the mass, energy, and momentum of the electron in its travels, has solutions which describe knowledge in the mind of the observer rather than real waves traveling in the real universe. The wave solutions change as the observer makes measurements and gains knowledge.

This "explains" many of the peculiarities of the QM formalism, but it also leads to new problems including a long list of QM interpretational paradoxes: the Schrödinger's Cat paradox, Wigner's Friend paradox, Wheeler's Delayed Choice paradox, etc., all of which are rooted in the way the Copenhagen interpretation conjures with the observer and his state of knowledge.

Most practicing physicists are not concerned with these interpretational problems, since the predictions of quantum mechanics have been compared with experiments many times and have always been found to be valid. Quantum mechanics works, so they use it without concern for the bizarre behavior that the equations suggest.

A minority of physicists has continued, without much attention from the mainstream physics community, to confront the interpretational paradoxes of quantum mechanics and seek their resolution. The Many Worlds interpretation of quantum mechanics is such an effort. Its originator, Hugh Everett III, was a graduate student working with Prof. John A. Wheeler at Princeton University in the mid-1950s. Everett considered it "unreal that there should be a 'magic' process in which something quite drastic occurred (the collapse of the wave function), while at other times systems were assumed to obey perfectly natural continuous laws."

Everett's Ph.D. dissertation presented his new QM interpretation, a radical approach which uses neither collapsing wave functions nor observer knowledge. Instead it proposes a deceptively simple alternative: *the wave function never collapses*. Instead, at every occasion where a quantum event has more than one outcome (e.g., when an electron may strike one atom or another), *the universe splits*. We have one universe where the electron hits atom A, another where it hits atom B, and so on for all of the possible outcomes. Similarly, if a light photon might be transmitted or reflected, if a radioactive atom might decay or not, the universe splits into alternative worlds, with one new universe for each and every potential outcome. This is the Many Worlds (MW) interpretation.

From the MW viewpoint, the universe is like a tree that branches and re-branches into myriads of new subbranches with every passing picosecond. And each of these new branch universes has a slightly different subatomic "history." Because an observer happens to have followed one particular path through the diverging branches of this Universe-Tree, he never perceives the splitting. Instead he interprets the resolution of the myriad of possibilities

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

into one particular outcome as a Copenhagen-style collapse. But the observer plays no active role in the splitting.

Events at the quantum level, of course, must lead to consequences in the everyday world. There should be a MW universe in which *every* physically possible event has happened. There should be MW universes where the dinosaurs dominate the planet, where the Persians defeated the Athenians at Marathon, where Caesar and Jesus and Napoleon and Einstein and Ronald Reagan were never born, where World War IV has just reduced your present location to a smoking radioactive ruin. Even as you read this sentence your Universe may be fragmenting into a number of branches too large to count.

And then again, it may not. The Many Worlds interpretation is not the only way of dealing with the interpretational problems of quantum mechanics. My favorite approach (perhaps because I invented it) is the transactional interpretation. The transactional interpretation is suggested by the formalism of quantum mechanics itself. The predicted "expectation value" of some property p of a physical system, in the QM formalism, is: $<p> = \int dv(\Psi^* \boldsymbol{P} \Psi)$, where $\boldsymbol{P}$ is a mathematical operator describing the measurement of p, $\int dv$ is a volume integration over 3-dimensional space, and Ψ is a wave function, the solution of the Schrödinger wave equation which describes the system being measured. We call Ψ a *retarded wave* because it has a built-in time delay so that it arrives at some distant location *later* than it started. The wave function Ψ^* is the time-reverse (or complex conjugate) of Ψ. It is an *advanced* wave which arrives *earlier* than it started. In other words, Ψ^* is a wave that travels *backwards in time*.

The transactional interpretation takes the QM pairing of an advanced and a retarded wave quite literally. It describes any quantum process as a *transaction*, a handshake across space-time performed by the two-way exchange of advanced and retarded waves between the initial system and the final system, a two-way contract between the future and the past for the purpose of transferring energy, momentum, etc.

The transactional interpretation is explicitly nonlocal because, through such handshaking, the future in a limited way is affecting the past on the same basis that the past affects the future. A delicate balance in the formalism (in QM lingo, the commutation of separated-measurement operators) suppresses "advanced effects" and prevents faster-than-light and backward-in-time signaling (EPR communication). The transactional interpretation resolves all of the many paradoxes listed above. It eliminates the need for half-dead half-alive cats, universes with split ends, observer-dependent reality, and "knowledge" waves. In the transactional interpretation, the Schrödinger waves act in the external world as precursors of a quantum transaction. It demotes the observer from his major Copenhagen role as the anointed collapsor of wave functions to the minor role of superfluous bystander, watching a few of the transactions and recording their outcomes.

* * *

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Which of these QM interpretations is the best? Up to now it has not been possible to test QM interpretations because it is the QM *formalism* which makes testable predictions. The choice between interpretations has been decided by taste, aesthetics, and what you were taught in graduate school.

Non-linear quantum mechanics may change that. Steven Weinberg, Nobel laureate for his work in unifying the electromagnetic and weak interactions, has recently been investigating "non-linear" corrections to standard quantum mechanics. The onset of non-linear behavior is seen in other areas of physics and may, he suggests, also be present but unnoticed in quantum mechanics. Weinberg's non-linear QM subtly alters certain properties of the standard theory, producing new physical effects that can be detected through precise measurements.

As mentioned above, the mathematics of quantum mechanics is delicately balanced to block EPR communication. However, a recent paper in *Physical Review Letters* by Joseph Polchinski has demonstrated that Weinberg's non-linear corrections upset this balance, unblocking observer-to-observer EPR communication. Separated measurements on the same quantum system begin to "talk" to each other and faster-than-light or backward-in-time signaling becomes possible. Polchinski describes such an arrangement as an "EPR telephone."

He goes on to describe an "Everett-Wheeler telephone." In standard QM in the Many Worlds senario in which the wave function does not collapse, a measurement performed in one MW universe can have no effect on a measurement made in another. Polchinski demonstrates that in non-linear QM such measurements "talk" and can be used for *transmission of information from one MW branch universe to another*. With Polchinski's non-linear quantum telephones you could talk to yourself at an earlier time or to your alter ego in an alternate universe.

The Weinberg/Polchinski work had implications that are devastating for the Copenhagen representation of the wave function as "observer knowledge." Polchinski has shown that a tiny non-linear modification transforms the "hidden" nonlocality of the standard QM formalism into a manifest property that can be used for nonlocal observer-to-observer communication which is inconsistent with the "knowledge" interpretation.

Thus, the Copenhagen interpretation is not "robust" because it is inconsistent with a tiny modification of the standard formalism. The transactional interpretation and the many worlds interpretation, on the other hand, are so robust that they can be tested and verified (or falsified) by the same effect. If quantum mechanics has any detectable nonlinearity, we get a backwards-in-time telephone or a telephone to alternate universes, depending on which interpretation is valid.

But *is* quantum mechanics non-linear? Atomic physics experiments have been used by several experimental groups to test Weinberg's non-linear theory. So far these tests have been neg-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ative, indicating that any non-linearities in the quantum formalism are very small, if they exist at all. In my view the negative results are not surprising, because the atomic transitions involve only a few electron-volts of energy. If quantum mechanics does have non-linear properties, I would expect them to depend on energy and to appear only at a much higher energy scale. Weinberg-Polchinski tests should be made, if possible, with the highest energy particle accelerators. Perhaps then we can find out what connections can be made with Polchinski's quantum telephones. ■

REFERENCES

Many Worlds Interpretation:

Hugh Everett, III, *Reviews of Modern Physics 29*, 454 (1957);

Bryce S. DeWitt and N. Graham, eds., *The Many Worlds Interpretation of Quantum Mechanics*, Princeton University Press, Princeton (1973).

Transactional and Copenhagen Interpretations:

John G. Cramer, *Reviews of Modern Physics 58*, 647 (1986);

John G. Cramer, *International Journal of Theoretical Physics 27*, 227 (1988).

Non-Linear Quantum Mechanics:

Steven Weinberg, *Physical Review Letters 62*, 485 (1989);

Joseph Polchinski, *Physical Review Letters 66*, 397 (1991).

●A great man is he who leaves his successors in difficulties.

Paul Valery

●Among mankind money is far more persuasive than logical argument.

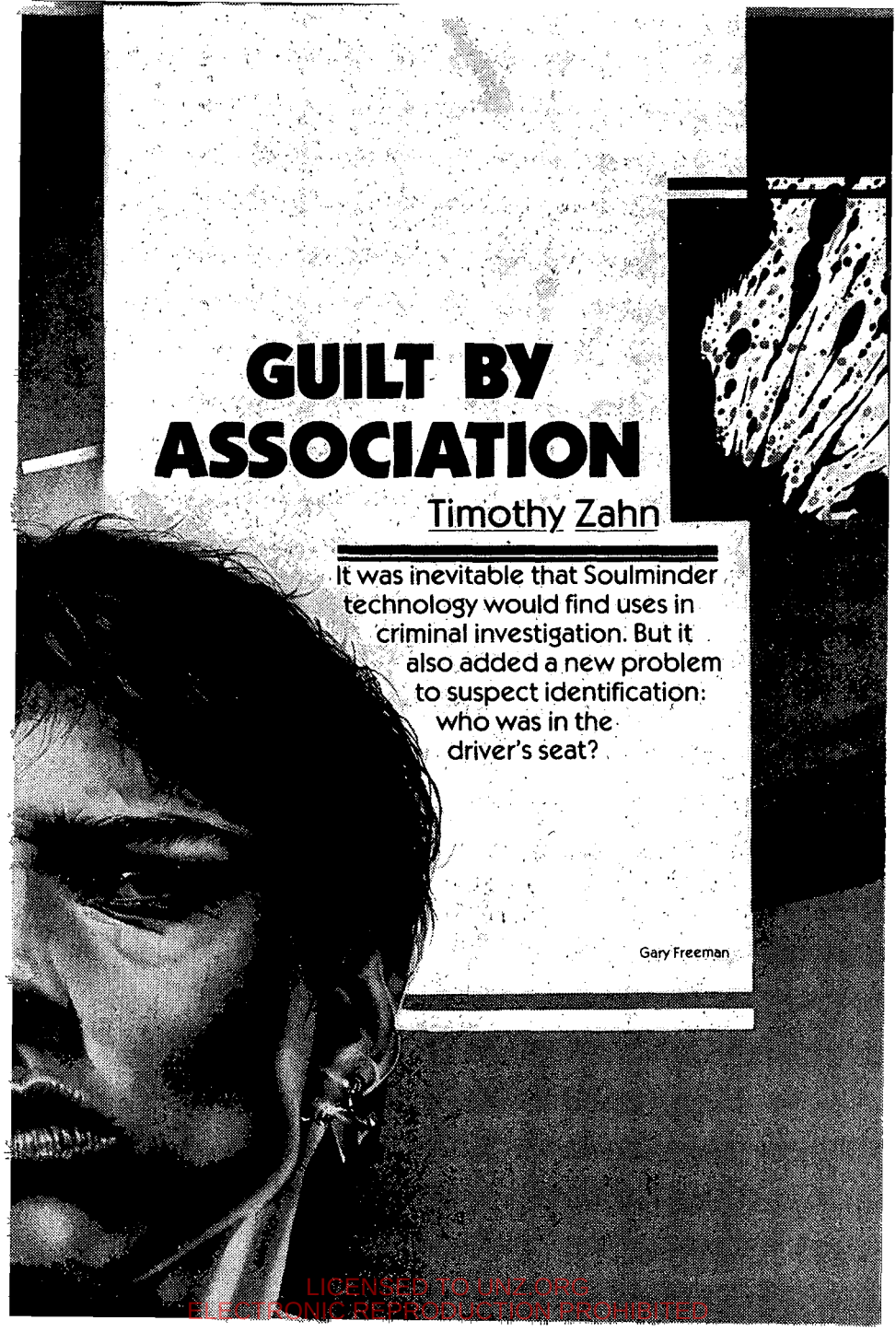
Euripides

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

GUILT BY ASSOCIATION

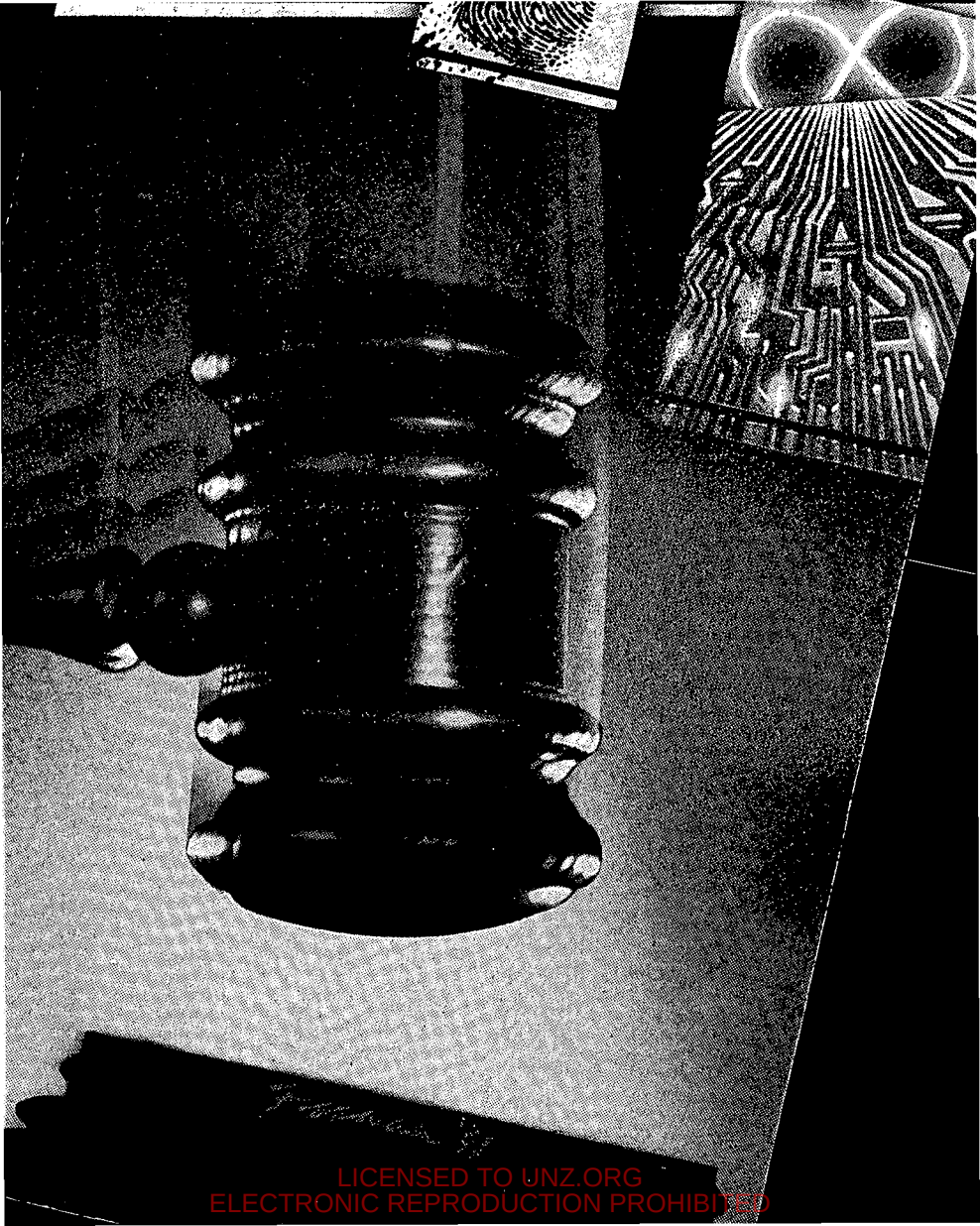
Timothy Zahn

It was inevitable that Soulminder technology would find uses in criminal investigation. But it also added a new problem to suspect identification: who was in the driver's seat?



Gary Freeman

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED



LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

They came at her out of the dark and gloom of the night shadows: ghostly and indistinct, walking with an almost-normal gait that was somehow more chilling than an exaggerated, movie-monster lurch would have been.

They were the walking dead, and they were coming for her.

She had turned away from them, and was slogging slow-motion through something that felt like waist-deep ice water, when they inexplicably began buzzing.

The dead froze for a moment, as if they too were listening to the buzzing; and then the nightmare shattered, and with a jerk of taut muscles Carolyn Blanchard was awake.

For another long moment her mind spun dizzily as it tried to fit the feel of the thin mattress beneath her and the dim features of the room into the pattern of her apartment. Then, from beside her head the buzz came again; and with that the disorientation finally cleared. Levering herself up onto an elbow, heart thudding hard in her chest and neck, she poked at the flashing button on the tabletop intercom. "Yeah—Blanchard," she said.

"It's McGee," the transfer supervisor's voice came. "We've got a floater, just came in."

"Right." Blanchard sat up and swung her legs off the cot, waiting for her head to adjust to the sudden change in altitude. A floater. Such a wonderfully innocuous term, she thought bleakly, for someone who'd just died. "Have you woken up Walker yet?" she asked, reaching down to pull her shoes on.

"He's already being prepped," McGee said, and this time she was awake enough to hear the mid-level tension in his voice. "He was already down here when the trap triggered."

Blanchard glanced at the clock on the Soulminder MiNex console beside her cot. Three-thirty-eight in the morning . . . and Walker Lamar had still been awake. Awake, and roving Soulminder's halls. "Swell," she grunted.

"Yeah," McGee agreed grimly. "We're in Transfer Five; if you want to see him before he goes under, you'd better hurry."

"On my way."

She got her shoes fastened and hurried out of the room, breaking into a fast jog. The corridors, so busy during normal working hours, were practically deserted, with only an occasional office worker or armed guard visible.

It was an illusory sort of emptiness. Even at this hour two to four of the transfer rooms would be fully manned, as would be the satellite monitor stations that watched for the emergency signals that could pinpoint a newly-dead Soulminder client. And in the center of the building, in the Core, there would be a full complement of highly placed managers and techs making sure that the Soulminder computers and software and traps performed with their usual flawless efficiency.

And if Blanchard never saw any of that elite cadre, it was for certain they were always watching her.

She almost made it in time; almost, but not quite. Even as she pushed through Transfer Five's swinging doors Dr. Wilkom Ng was already lifting his hypo from the man laid out on the pad-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ded table in front of him. Blanchard moved forward, eyes automatically flicking to the bank of monitors behind them; and before she was halfway to the table, the trace lines simultaneously went flat.

The man on the table, Walker Lamar, was dead.

Blanchard gazed down at the body, feeling that eerie sense of unreality that still sometimes hit her at this point in the operation. By all the legal and medical definitions of barely ten years ago, Walker was dead—completely and irreversibly dead. And yet, through the technological miracle that was Soulminder he was now, by current definitions, just as legally and medically alive. His soul, its complex Mullner pattern recorded months ago on the giant computers back in the Core, had been recognized, identified, and snatched away as it departed his body. Locked safely away in one of the hundreds of traps back there, floating in some sort of semi-existence that she'd never been able to get adequately described, it could remain protected indefinitely. And, provided his brain and body were similarly protected by neuropreservatives and full life-support gear, soul and body could be remelded at any time.

But those neuropreservatives had to be administered within a very few minutes of body death. If they weren't—if the brain tissue deterioration was allowed to progress past a critical point—then there would be no functional body left for him to return to.

At which point—living soul or not, Soulminder magic or not—Walker Lamar would be effectively dead. The trap would have to be turned off, and his soul would depart. Going wherever it was souls went to.

"You ready?" Ng asked.

Blanchard shook away the introspection. "Sure," she said, hoping she sounded more confident than she felt. Of all the difficult parts of this job, dealing with floaters was easily the worst. "What do we have on the floater?"

"Name's Jack Thornton," McGee told her. He was standing off to the side, next to the tech seated at the transfer room's MiNex terminal. "Fifty-one, professor of electrical engineering at Caltech, lives in Pasadena. Lives alone, unfortunately—divorced—so no possible help there. He triggered the trap just over two and a half minutes ago."

"From the lack of signal," the tech added, "best guess is that he's under water somewhere."

"Right," Blanchard nodded, the tightness in her stomach easing a little. In her past experience she'd always found middle-aged high-brow types relatively easy to deal with—generally polite and disinclined toward anything as undignified as hysteria.

Of course, none of those she'd dealt with had been freshly dead. "How long?"

"We're ready," Ng said. "Stand by . . . now."

On the console behind him lights changed color . . . and, with a suddenness that Blanchard was never quite prepared for, Walker Lamar's body jerked alive. "Wha—wha—?"

Blanchard twisted her neck to peer down into the confused face. "Dr. Thornton? Jack? Can you hear me?"

The eyes focused uncertainly on her. "Who—I mean, where—?"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"You're in Soulminder Los Angeles," she cut him off. "There's been some sort of accident. Where were you when it happened?"

The forehead creased. "Where was I . . . ?"

"You were in some kind of accident," Blanchard repeated. That was only a guess, but a fairly safe one. And from the almost-foggy look in his eyes—"Had you been drinking earlier? Did you drink and then get in your car and drive somewhere?"

A sudden look of horror flooded his face. "It wasn't a dream," he hissed. "It was—I was *dead*."

"Jack, your body is missing," Blanchard told him, putting steel into her voice. If he slid off into panic or denial now, their chances of saving him would go straight to zero. "It's missing, and your Soulminder wristband isn't signaling its location. We need to know where you died; and we need to know it *now*."

For a long second she thought it hadn't worked. Those eyes stared at and through her . . . and abruptly seemed to twitch. "I was coming back from Coldbrook," he murmured. "Along 39."

The tech at the console was already punching keys, and a second later the full-wall display behind Ng lit up with a detailed map of the San Gabriel Wilderness and Angeles National Forest regions. Highway 39 snaked through the middle of it; and at the lower middle —"Had you passed the San Gabriel Reservoir yet?" she asked. "Jack?"

The eyes defocused again. "Yes," he said, his voice stronger and more sure of itself. Starting to catch up with the emotional shock of it. "And . . . yes, I'd passed the Morris Reservoir, too."

The map display shifted, enlarged . . . "Gotta be the river," someone said.

"Do you remember anything else, Jack?" Blanchard asked. "Anything that might help us to find—"

"I went off the road." A hand came up, seized her arm in a panic grip. "I went off the road, and the river was there—oh, *God*."

Blanchard reached her free hand over to grip his. "It's all right," she assured him, hoping fervently that wasn't a lie. On the display a small white circle had suddenly appeared, heading toward the target zone from downtown Los Angeles. "It's all right," she repeated. "An emergency team's on the way."

"I must have drowned," he whispered. "Oh, God. Oh, God. I drowned. I'm *dead*."

Blanchard clenched her teeth. Thornton was losing it again. Hardly surprising, under the circumstances; but in her mind's eye she could see the adrenaline surge that all that panic was pumping into Walker Lamar's body. . . .

She caught Ng's eye. He nodded back, the hypo already prepared. "Now, just relax, Jack," she said soothingly, keeping her grip on his hand. "We're going to have to let you go back into Soulminder for a little while. But it'll be all right."

The eyes looked at her, not understanding. She braced herself for the reaction when that understanding finally came. . . .

It did, and the eyes were suddenly filled with shock . . . but by then it was too late for any reaction. Ng withdrew

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the needle from the other's arm; and, with welcome anticlimax, the eyes rolled up and the grip on Blanchard's arm loosened.

And Walker Lamar was dead. Again.

Blanchard took a shuddering breath and lowered the limp arm back to the table. Out of the corner of her eye she saw McGee step to her side, his stance that of someone who wanted to talk. "What are his chances?" she asked, keeping her eyes on Ng.

"Thornton's? Hard to say," he shrugged, glancing over his shoulder at the map display. Already the circle marking the rescue team was almost to the suspected accident site. Dimly, Blanchard wondered what kind of speed that helicopter was making. "The water there should be pretty cold, which will help slow down any neural deterioration," Ng added, turning back to Lamar's body.

"At least they won't have any problem finding him," McGee put in. "Not now. His wristband can't transmit far enough through water to reach the satellites, but the rescue chopper's detector will pick it up a minimum of a mile away. At that point," she sensed him shrug "it'll be a matter of how fast the team can pull the body out of the car and get it into neuropreservatives and life-support."

Blanchard nodded. McGee's politely confrontational stance hadn't changed. . . . "I presume you want to talk about Walker," she said.

She looked at him in time to see his lips pucker. "This makes at least four times we've seen him wandering around in the wee hours," he reminded her.

"I can count," Blanchard growled. "Has it ever occurred to you that it might be nothing more than an occasional touch of insomnia?"

McGee's eyebrows lifted. "It has, yes. But I somehow doubt you'd be quite so defensive if that was all there was to it."

Blanchard dropped her eyes to Lamar's motionless face. His motionless, *dead* face. "This happens to people in high-stress occupations," she said doggedly. "He'll get through it OK."

"Probably he will. But will *you?*"

She forced herself to look back at him. To meet that steady gaze. "I've done things that were *lots* harder than this, Mr. McGee. My year as bottom-rung police psychologist in St. Louis, for obvious example. Compared with getting into a serial killer's head, handling a Professional Witness is a stroll through the park."

For a moment the other studied her, as if somehow divining the nightmare she'd been having when he'd woken her up. But then a timer on the console pinged gently, and one of the techs handed Ng a fresh hypo, and—almost reluctantly, she thought—McGee turned his attention back to Lamar's body. "If you say so," he said. "If I were you, though, I'd watch out for muggers on this particular stroll. Serial killers may scare the pants off you, but at least you never had to watch any of them die over and over again."

Blanchard didn't reply. Behind Ng a set of indicator lights flicked on, indicating that the neuropreservatives that had protected Lamar's brain and nerve cells from damage during the crucial first minutes of his induced death had now been adequately flushed from his

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

body. Ng double-checked everything, then nodded to the tech at the Soulminder console. The latter nodded in return, touched a switch—

And with a shudder that ran up his entire body, Walker Lamar returned to life.

"Hi," Blanchard said, forcing a casual smile onto her lips as Lamar's eyes focused on her. "How are you feeling?"

"Oh—" the eyes defocused again, just for a second. "Fine. I guess. Fine. I guess."

"Then I guess you must be fine," she said, striving for a note of levity. "Doctor?"

"Everything looks good," Ng nodded. "Blood pressure's a little high, Walker, but that's a normal part of your post-transfer profile."

"Great." Blanchard found Lamar's hand, squeezed it. "So. Excitement's over; I guess it's back to bed for—"

"Is he going to be OK?" Lamar interrupted, twisting his head to look at the map display.

"They're pulling the body out of the car right now," the tech at the communications console spoke up. "Everything else is ready."

"They probably won't know for sure for at least an hour," Blanchard reminded him. "Maybe longer. I'm sure that if you ask Mr. McGee he'll have someone wake you up whenever they have something."

Lamar looked at McGee, as if only just noticing his presence. Then he shrugged, a strangely jerky movement of his shoulders. "Yeah, well . . . I'm not all that sleepy now, anyway. I guess I'll just hang around." Abruptly, he sat up all the way, swinging his legs clumsily over the edge of the table. "Maybe I'll take a little walk first, though," he added as Blanchard and McGee each grabbed an arm to help steady him. "Get used to having legs again, and all that. Unless you need me here, 'cause I could stay."

Almost word for word the same speech he always gave. Behind her smile, Blanchard felt her teeth clench up. Needing some time alone to recover from such an experience was neither abnormal nor unhealthy; but to try so hard to pretend he didn't really *need* it was something else again. "No, go ahead," she told him. "Someone'll let you know as soon as they know about him."

"Don't worry, though," McGee said soothingly. "Dr. Thornton's got a real good chance."

"Thornton," Lamar said thoughtfully, almost as if tasting the sound of the name. "I knew someone named Thornton once."

"Doubt it's the same one," the tech at the MiNex terminal shook his head. "This one's named Jack, fifty-one, works at CalTech—"

"You can get all the details from Thornton himself later," Blanchard cut the tech off, throwing a warning glare in his direction. There was still a fair chance Thornton's brain had gone too long without neuropreservatives to be savable, and if that happened she'd rather Lamar have known the man only as a faceless shadow. "For now, I really think you ought to go to bed," she added. "You need to get some rest—don't forget we're due in court at ten tomorrow morning."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Lamar's lip twitched, just a bit. "Yeah. Right."

Blanchard squeezed his hand again. "OK. So, I'll see you then. Sleep well."

"Sure." Lamar seemed to brace himself, then lurched forward, landing on only slightly unsteady feet. With a vague sort of wave over his shoulder, he shuffled to the door and left.

Blanchard took a deep breath, exhaled it silently. She'd been with Lamar ever since he'd joined the LA Pro-Witness program eight months ago. As much as she hated to admit it, down deep she knew that McGee was right.

Lamar was starting to lose it.

"I think maybe we ought to recommend to the D.A.'s office that they pull him off," McGee said quietly from behind her. "Whether he likes it or not."

Blanchard turned to face him. "We can't do that," she said. "If he quits in the middle of a case, they won't let him come back."

McGee snorted gently. "I submit that his mental health is more important than his job."

"I submit the two aren't separable," she countered tartly. "I don't know if you've read his file, but this is the first job Walker's ever had that's had even a scrap of public dignity associated with it. You tell him he can't handle it and throw him out, and his wallet won't be the only thing that suffers."

"OK," McGee said. "Fine. So just get him a leave of absence or something. I mean, we *are* Soulminder, after all. The right word to the right person ought to be able to bend city policy a little."

Blanchard shook her head. "Not this time. The D.A.'s office is very jealous of its turf here—and very sensitive to suggestions that Soulminder might be quietly running their Pro-Witness program for them."

McGee sighed, his gaze flicking over her shoulder to where Lamar had exited. "I don't like keeping him on, Doctor," he said quietly. "Not in the shape he's in. I really don't."

"He'll make it," she said, forcing conviction she didn't feel into her voice. "As soon as the Holloway case is wrapped up I can get him some off time."

"You really think he'll last that long?"

"Of course he will," Blanchard growled. Abruptly, she was tired of this conversation. "All the pre-trial stuff is over—Holloway will testify and be cross-examined tomorrow, and that'll be it until he comes in for the verdict and sentencing. Now if you'll excuse me, I have to be in court tomorrow."

"You want me to wake you if Thornton makes it?" McGee called after her as she headed for the door.

"Don't bother—I'll read about it in the morning."

She was still awake an hour later when the news came over the MiNex console that the team had indeed gotten to Thornton's body in time.

The line went flat, and Walker Lamar was dead. Again.

"It'll be just another minute," the doctor told the assembled officials.

"Fine," Judge Harold Grange nodded, his face and voice glacially calm. In contrast, Assistant D.A. William Dorfman looked almost bored, while defense attorney James Austin seemed

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

hawk-eyed alert. Watching for a mistake, Blanchard decided—some legal technicality he could use in his appeal. At least she assumed that was his strategy; from what she'd heard of Holloway's discussions with the D.A. that was probably the only chance Austin's client had.

"Ready," the doctor said briskly. "Here we go. . . ."

The indicator lights changed colors, the biotrace lines became squiggly again . . . and on the transfer table Lamar's body came back to life.

The judge took a step forward. "Michael Holloway?" he asked.

The eyes had been gazing at the ceiling, studying it as if he'd never seen self-cleaning ceramic tile before. Turning his head, he looked at the judge, the same oddly rapt look in his eyes. "Yes," he murmured. He licked his lips, first the upper and then the lower; licked them both again as if savoring the experience. "Yes," he repeated, louder this time.

"It's time." The judge turned back to the two lawyers. "Let's go. Get everything signed," he added to the young clerk standing over by the readout console, a sheaf of legal papers clutched in her hand. Without waiting for a reply, he strode to the transfer room door and headed out.

Ten minutes later, in the new courthouse that had been built next door to Soulminder Los Angeles for just this purpose, the case of *People v. Battistello* was reconvened.

"The people," Dorfman announced, "call Michael Holloway to the stand."

Beside him, the witness got to his feet and stepped to the stand. His eyes, Blanchard noted from her seat behind the prosecutor's table, continued to dart all around the room as he was being sworn in.

"State your name for the record," Judge Grange said.

He settled himself gingerly into his chair, leaned forward toward the microphone. "Michael Andrew Holloway."

Judge Grange shifted his attention to Dorfman. "Are the people prepared to prove that this is indeed Mr. Holloway speaking?"

"Yes, your honor." Dorfman half turned. "The people call Katherine Holloway Ross and Lisa Holloway Davis."

Two well-dressed women in their forties stood up and came forward, and Blanchard felt a little of the tightness go out of her stomach. She'd argued strongly with Dorfman that he use Holloway's sisters rather than his brothers, but up until right now she hadn't been at all certain the prosecutor would follow that recommendation. The confirmation procedure could be devastating for everyone involved, and in her admittedly limited experience she'd found that women tended to handle the emotional trauma better than men.

The two women had arrived at the bench now, flanked by the opposing attorneys. "As per federal statute concerning Professional Witness testimony," the judge said, his gaze shifting back and forth between the women, "the first three questions from each of you will be public, and on the public record. All others may, if either or both of you so choose, be confidential between yourselves, the witness, and the court. Those questions and their answers will be sealed by this court against

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

any and all public disclosure, except in extraordinary circumstances. Do you both understand?"

They nodded. "Then you may proceed," the judge said, swiveling his microphone around to face them.

There was a second of hesitation. Then, the elder of the two women stepped up to it. "Mike," she said, her voice trembling just a bit. "When you were ten, we all drove to Florida—do you remember? What did Jonathan say that had all of us in hysterics, and where was he when he said it?"

A wistful, almost ghostly smile touched his face. "He was sitting in the far back seat of the station wagon," he said. "The way-back-in-the-back, we called it. And he was calling, 'Get off our road!' at the cars behind us."

A quiet chuckle ran through the jury box. The woman stepped back, her eyes suddenly tear-bright, to be replaced at the microphone by the younger woman. "Mike, what pet did I have when I was in fourth grade?" she asked.

His forehead creased. "You had a *lot* of dumb pets when you were little, Lise."

"This one died the day after it bit me."

The frown cleared. "Ah. Well, *that* would have been your hamster."

Another ripple ran through the jury; but to Blanchard's ears this one sounded strained. As if the mention of death had reminded them that they were not, in fact, merely here to witness a genial family reunion.

She looked over to where the defendant was sitting, his face carved from frozen stone as he watched the proceedings. He, certainly, hadn't forgotten why they were there.

The questioning lasted almost twenty minutes, but when they had finished both women agreed that it was indeed their brother sitting in the witness chair.

"Let the record show," Dorfman said as the sisters returned to the spectators' section, "that personal identification, plus signed affidavits from Soulminder authorities, have established that the soul of Michael Andrew Holloway currently resides in the body of Professional Witness Walker Lamar." He let his eyes sweep the jury, then turned back to the witness box. "And now, Mr. Holloway, would you please relate to the court the events of the evening of January 27 of this year."

He seemed to brace himself. "I left my office about six-thirty," he said, his voice almost too low for the microphone to pick up. "I was walking to the car when I heard footsteps coming up behind me. I turned around, and there was a kid behind me with a gun."

He paused, tongue flicking across upper and then lower lip. "He told me to give him all my money or he'd blow my head off."

"Did you comply?" Dorfman asked.

"Yes, right away," he nodded, a jerky movement of his head. "I tried to, anyway. I reached into my coat pocket for my wallet—" He took a deep, shuddering breath.

"Did he say anything else, Mr. Holloway?" Dorfman asked into the momentary silence. "Warn you not to make any sudden moves, or anything like that?"

He shook his head. "He didn't say anything at all."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"Nothing?"

"No. He was as cool as if he'd done this a hundred times."

"Objection," Austin said, half rising from his seat beside the defendant. "The witness is speculating."

"Sustained," Grange nodded. "Please confine your comments to answering the questions, Mr. Holloway."

The lips puckered slightly. "Yes, sir," he muttered.

"So," Dorfman continued, "you reached for your wallet. Did you bring it out?"

"I didn't get a chance to," he said bitterly. "My hand was still inside my coat . . . when he shot me."

Dorfman let the words hang in the air for a moment. "How many times did he shoot you?" he asked.

"Objection." Austin was on his feet again. "More speculation."

Grange nodded. "Sustained. Rephrase your question, counselor."

"How many bullets did you *feel* hit you, Mr. Holloway?"

"I felt two," he whispered. "Both in my chest. And I think I heard a third one after I fell on my back, but I don't remember feeling it hit me."

"Two shots, both in your chest," Dorfman repeated. "And yet, the coroner reported finding *ten* bullets, which means that even after you were unconscious—"

"Objection," Austin called indignantly.

"Sustained," Grange growled. "Save the summing-up for your closing, Mr. Dorfman."

"Yes, your honor. Tell me, Mr. Holloway, do you see the man who shot you anywhere in this courtroom?"

"Yes."

"Will you point him out?"

The witness took another deep breath, his eyes shifting from Dorfman to Battistello. "He's right there."

Dorfman nodded, his expression theatrically grim. "Let the record show," he intoned, "that Michael Holloway has identified the defendant, Mr. Battistello, as the man who assaulted him on the night of January 27.

"The man who murdered him."

There was more, of course. Much more.

Dorfman walked the witness through the murder in carefully precise detail, focusing a large percentage of his attention on Holloway's recollection of the assailant's clothing, expressions, and actions. The exercise was very obviously a painful one, and more than once Blanchard felt herself wincing in sympathy with the terror and anger and helplessness boiling quietly out of the witness box. It was a straightforward enough strategy—Dorfman was bidding for jury outrage while simultaneously going for a preemptive blunting of any future attempts by the defense to cast doubt on the victim's memory. But knowing that didn't make it any easier to take.

The direct testimony was hard enough to sit through. Austin's cross-examination, urbanely hostile and subtly condescending, was even worse. By the time the defense attorney sat down Blanchard's stomach was a mess of churning acid.

"It is now five minutes until twelve," Judge Grange announced as the witness left the stand and made his way back

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

to the prosecutor's table. "We'll take a ninety-minute recess for lunch, and reconvene precisely at one-thirty."

He banged his gavel and headed for chambers, and the courtroom participants and spectators began to break up into movement and the buzz of conversation.

"So what happens now?" the witness asked as he and Dorfman stood up. "Will I need to come back for more testimony?"

"Unlikely," Dorfman said, the bulk of his attention on the papers he was shoveling into his briefcase. "Unless Austin decides to recall you, your part in this is pretty well over."

The other licked his lips, his gaze fluttering around the courtroom. "Any chance I can come back this afternoon and listen to Austin's case?"

Dorfman looked at Blanchard. "Doctor?"

"I'm afraid that won't be possible, Mr. Holloway," Blanchard told him. "You've been using Walker Lamar's body for just under two and a half hours, and the legally allowed maximum is three hours per day."

"The closing arguments, then?" he persisted, a strangely yearning expression in his eyes. "Can I at least come back for the closing arguments?"

"I can ask," Dorfman shrugged, snapping the locks on his briefcase with a sharp double click. "But Austin's bound to object; and since the judge will be denying his motion to dismiss, he'll likely let him have that one." He glanced at the other; took a second, closer look. "You'll be coming back for the verdict, though," he told the other. "That one's guaranteed by law."

"I know," he sighed. He looked around the courtroom again—almost, Blanchard thought, as if committing it to memory. "I just wish . . ."

"I wish, too," Dorfman grunted. "Having the victim in the courtroom usually helps the prosecution, which is why Austin will fight it. Not that we're going to need any help in this particular case," he added reassuringly. "Look, I've got to get going—Austin'll be filing motions with the judge, and I need to be there to argue against them. See you later." With a nod to each of them, he strode off toward the judge's chambers.

Blanchard looked at the witness. "You OK, Mr. Holloway?"

He swallowed. "Yeah," he said, his voice soft.

"You did well, if that helps. I know it was hard for you."

"I did what I had to do." He took a deep breath. "I guess we'd better go."

He walked around the bar and into the aisle, Blanchard sidling down her row to meet him. At the rear of the courtroom the last of the other spectators were just leaving; lengthening his stride suddenly, the witness caught up with them, leaving Blanchard behind. She broke into a jog, caught up as the group pushed open the heavy door. Without looking back, he let the door swing back on her; catching it, she shoved it open again—

And stepped out into a blaze of light.

"Mr. Holloway?" someone called through the locust-clicking of multiple camera lenses. "What can you tell us about the trial?"

Blanchard reached out blindly, grabbed his arm. "Give it a rest, people," she snapped toward the reporters before he

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

could answer. "You want a mistrial or something? You know there's a gag order on Mr. Holloway. Come back after the verdict."

"How about *you*, then, Dr. Blanchard?" someone else suggested. "What do *you* think of the trial so far?"

"No comment from me, either," Blanchard growled, gripping the arm a little tighter and giving him a push toward the elevator. "Go light some other corner of the world, huh?"

She stumbled out of the glare, cursing to herself at the spots dancing in front of her eyes. Modern video cameras could record perfectly well in normal background light; the only possible reason for the media to still use those half-sized searchlights was in the hopes of dazzling their victims into saying something they shouldn't. Blinking away the tears, she turned—

And froze. The man whose arm she still held, the man frowning bemusedly down at her, was not Walker Lamar.

Letting go as if scalded, she looked around her. But it was no use. With a dozen courtrooms and offices simultaneously breaking for lunch, the corridor was filled with hurrying people, blocking her view.

Holloway was gone . . . and he'd taken Lamar's body with him.

"The first thing you need to do," Soulminder Security Duty Officer Larry Carstairs said soothingly into her ear, "is to take a deep breath and *not* panic. Breathe; don't panic. Think you can handle that?"

Blanchard gripped the pay phone a little harder. "There are situations in life, Carstairs," she bit out, "where a certain level of flippancy is welcome. This isn't one of them."

"You're taking this way too seriously, Dr. Blanchard," the other said with that same maddening calm. "This is no big deal—we've had witnesses getting away from their liaisons ever since these Pro-Witness programs got going. Chances are he just wanted to wander around in the sunlight for awhile without someone hanging around reminding him that he's legally and technically dead. He'll be back—he knows he needs to be transferred out by 12:30, after all."

Blanchard gritted her teeth, last night's nightmare flashing through her mind. The walking dead . . . "And what if he *doesn't* come back?" she countered. "You're not going to find him just sitting there making hopeful noises."

Carstairs sighed audibly. "Even as we speak, Doctor, there are some ten people at both ground level and at upper windows already in the process of looking for him."

"Oh, right," Blanchard snorted. "Noontime at Ridley Square is a *great* time to go looking for somebody."

"It'll be easier than you might think," Carstairs countered, his calm tone fraying a little at the edges. "Or did you assume that those god-awful powder-blue blazers the Pro-Witnesses wear are somebody's idea of good taste? You wouldn't believe how easily those things stick out of a crowd. I don't tell you how to do your job; kindly don't tell me how to do mine."

Blanchard took a deep breath. "I'm sorry," she said, trying to sound like she meant it. "I just—God, he's stolen someone else's *body*."

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"Only borrowed it," Carstairs said, all soothing again. "Don't worry, we'll get him back. Even if the quick and dirty approach doesn't work, there are other tricks we can try. You might as well come on in—we'll bring him directly to the transfer room when we catch him."

Blanchard glanced around the courthouse corridor, already considerably less crowded than it had been five minutes earlier, hoping against hope she'd see her quarry waiting there for her. She needn't have bothered. "Yeah," she told Carstairs. "I'll be there in two minutes."

"I'll talk to you then. And really, Dr. Blanchard, try not to worry. I'd be willing to bet you a week's pay we'll have him spotted before you even get here."

It was a bet she should have taken. Leaving the courthouse annex, she hurried across the sun-drenched walkways bordering Ridley Square to the Soulminder building . . . to find that he was still missing.

"He's apparently taken off his blazer," Carstairs grunted, his attention off on something out of range of Blanchard's intercom camera. "Probably folded it inside-out over his arm. Otherwise, we'd have seen *something* through the filters."

"So what now?" Blanchard asked, fighting hard against the urge to let off something blisteringly sarcastic. Recriminations and blame-placing could wait until after they'd found him. Assuming they ever did. "The three-hour limit expires in—" she glanced at her watch—"just under twenty minutes."

"Thank you; I *can* tell time," Carstairs growled. "I still think he's probably somewhere in the general Ridley Square area, but we've got someone checking out cab and limo companies anyway."

"How about area restaurants?" Blanchard suggested. "I once had a witness who said he'd kill for the chance to taste prime rib again."

"Already checking them," Carstairs nodded. "You got anything on Holloway himself that might be useful? Anything he said or did that might point to where he's gone?"

"I've been trying to think," Blanchard shook her head. "But so far I've come up dry."

"Yeah. Well, don't worry about it. Like I said earlier, we've got a few other strings to our bow here. They'll just take a little more time, that's all."

Blanchard nodded, fighting against the flood of utter helplessness rising to choke her. "Yes, I understand. What can I do to help?"

"Not much, really." Carstairs studied her. "On second thought," he amended, "they could probably use another spotter up on five. Outer corridor—they'll have some spare binoculars up there you can use."

Blanchard nodded. It was, she realized, little more than make-work—Carstairs's people would be far better at this sort of thing than she would. But it would at least give her the illusion that she was doing something to help clean up the mess she'd made. "I'll be right up."

In the nine months since she'd arrived at Soulminder Los Angeles, Blanchard had become more or less acclimated to the incredible masses of people that descended upon the Ridley Square park

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

every day at lunchtime from the office buildings surrounding the patch of green. Now, looking down at it from the fifth floor, that original bit of culture shock came back with a vengeance.

"You take that section of the park," the surveillance chief instructed her, pointing out a rough wedge of Ridley Square bordered by two winding woodchip paths and the outer sidewalk of the park itself. "Look at everyone already there, and check anyone who comes in."

"Got it." Lifting the binoculars to her eyes, trying to calm her pounding heart, she got to work.

The minutes ticked by. There were, probably not by accident, relatively few people in her sector, and all too soon she'd confirmed that Walker Lamar's face wasn't among them. "All negative," she reported to the surveillance chief. "What should I do now?"

"Start on the next sector to the east," he told her. "We've already covered the park," he added, as if sensing her next question, "but it's always possible he might have slipped back in while we concentrated on other areas."

"Right."

She'd covered that section, and was just starting on the next, when she heard a sudden quiet intake of breath from the women next to her. "Got something," the other said. "Grid Double-A forty-seven, with a two-twenty vector."

"Got it," the chief said. "Blanchard?—that switch on the right side of your binoculars; push it forward."

She did so, and to her surprise a faint heads-up grid abruptly appeared, superimposed on the view. "Where was he again?" she asked, searching the grid edges for the identifying letters and numbers.

"Double-B forty-three, now," the woman beside her said. "Angling toward the Soulminder building, more or less from the direction of the courthouse."

One look was all it took. "That's him," Blanchard nodded, a wave of relief washing over her.

"All right; the ground people are on him," the chief said. He sounded relieved, too. "They'll have him in the transfer room in two minutes." He glanced at his watch. "Nice timing on his part—you won't even get the satisfaction of chewing him out."

Blanchard looked at her own watch. Twelve twenty-eight; just those same two minutes until the legal time limit ran out. "Don't bet on it," she said grimly, handing him the binoculars and heading for the elevator.

She made it to the transfer room maybe twenty seconds before the witness and his security escort got there. "Holloway, what the hell was *that* all about?" she snarled as they came through the door. "You have *any* idea how much trouble you've just caused?"

She'd been prepared for him to argue back at her; instead, he avoided her eyes as the security guards hustled him to the table. "I'm sorry, Dr. Blanchard," he said, his voice as meekly and humbly apologetic as if he were an eight-year-old caught stealing from the cookie jar. "I didn't plan to run away from you like that, really I didn't. But when those newsmen grabbed you—well, I just thought it would be nice to walk around in the sun for a while. It's—well, you

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

know. My last chance to do something like that."

Blanchard clenched her teeth hard enough to hurt. Exactly what Carstairs had suggested he might be doing . . . and despite her resolve, she could feel her anger melting away into an impotent frustration. How— really —could she blame him for something like that? "I understand. I guess. But you still shouldn't have done it."

"I know, and I'm sorry. Well." He swallowed, his lip twitching slightly as the doctor applied his hypo. "Gotta go, Dr. Blanchard," he murmured, eyes already glazing over. "Walker needs his exercise."

"Good-bye, Mr. Holloway," she murmured. A moment later Michael Holloway's soul was back in its Soulminder trap . . . and Walker Lamar's body was again dead.

She sighed, looked at her watch. Twelve thirty-two exactly. They'd gotten Holloway out of Lamar's body two minutes late.

"A technical violation only," the doctor assured her. "Two minutes aren't even worth anyone slapping our wrists for."

Blanchard nodded silently. The doctor and techs busied themselves with their work . . . and a minute later Walker Lamar was back in his own body again.

Blanchard stepped to his side, forcing her best imitation of an unconcerned smile. "Hi," she said. "How are you feeling?"

He blinked at her, then at the ceiling. "About the same as always," he said. "Fine. I guess." He focused on her again. "How did it go?"

"Dorfman sounds confident," she shrugged. "Though who can tell what that means with lawyers? So. You ready for lunch?"

"In a little while, maybe." With a jerk of legs and shoulders he sat up on the table. "I think I'll take a little walk first—get used to having legs again, you know."

Blanchard nodded. "Sure." She glanced over his shoulder at the doctor. "Actually, I've got some things I have to do first, anyway. What do you say I meet you up in the cafeteria at one o'clock or so?"

Lamar seemed to bring his attention back from somewhere else. "OK," he said. "Sure. See you then."

Easing his hips forward to the edge of the table, he touched feet to floor and got his balance. Walking a little unsteadily, he passed between the two security guards still flanking the doorway and left.

Blanchard watched him go; then, steeling herself, headed over to the intercom. Somewhere, she knew, there would be a mass of paperwork waiting for her on this one.

It wasn't as bad as she'd feared it would be. Under Carstair's watchful eye she filled out the first wave of forms, accepted with thanks his assurances that his own report wouldn't be assigning her the blame for what had happened, promised to be back by two to tackle the second wave of paper, and managed to make it to the cafeteria by ten after one.

Lamar was waiting for her. "I was starting to wonder if you were coming," he said as they picked up trays and started down the line.

"I had some paperwork to do," Blan-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

chard told him with a shrug. "It took longer than I expected."

He reached over and selected a salad, placed it on his tray. "You've never had paperwork to do right after a transfer before," he said quietly, making a minute adjustment in the salad plate's position on his tray. "Something went wrong, didn't it?"

Blanchard grimaced. She'd hoped to keep Holloway's little solo run quiet, at least until Lamar had had a little more time to recuperate. "Holloway got away from me at the courthouse," she told him with a quiet sigh. "He just had a little time out on his own, that's all."

Lamar seemed to straighten up, shoulders hunching as if settling himself more comfortably into his clothes. Or into his body . . . "What did he—I mean—"

"He was out for barely half an hour," Blanchard told him, keeping her voice as reassuring as possible. "The worst he could have done was get you a little sunburned."

"Yeah." The corners of Lamar's mouth twitched, as if he were trying to smile but couldn't. "Well, I can tell he didn't eat, anyway."

They completed the line in silence, handed in their ID chits at the register, and found a quiet table over near the windows.

"So," Lamar said, hunching over his tray as he carefully sprinkled salt on his chicken. "Are you in trouble now?"

Blanchard shrugged, trying to look casual. "I don't think so," she said. "Carstairs says this has happened before at other Pro-Witness programs."

"What did they do? The other witnesses who escaped, I mean?"

"Walker." She reached over to squeeze his hand. "It's all right, really it is."

A muscle in his cheek twitched. "I know," he said. "I was just wondering—well, you know, just what someone could do out there in half an hour." His eyes flicked to her, turned away. "I mean, he didn't eat. He didn't get drunk. What else is there? A woman?"

"It's all right," she said softly. "Really. It's all right. Holloway was probably doing just what he said he was: taking one last chance to walk alone out under the sun."

"Yeah." Gently, Lamar pulled his hand back from her, picked up his coffee. "I don't blame him, you know," he said, staring into the mug. "I was just wondering if . . . well, you know, if he found a hooker who had a disease or something . . ."

"It'll be all right," Blanchard told him, realizing she was starting to sound like a looped program. "As soon as we're finished here we'll go back downstairs and set up an appointment for a complete physical, OK? And right after that, we'll go talk to the Pro-Witness people about getting you a month or so of leave time after this case is wrapped up."

Lamar's lips compressed into a thin line; then, regretfully, he shook his head. "Thanks, but I can't afford to take that much time off."

"So we'll make it a paid leave," Blanchard said firmly. "No more argument—in fact, no more shop talk at all. Eat your chicken before it gets cold."

He smiled, the first genuine smile

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

she'd seen on him all day. "Yes, Mom," he murmured.

They ate at a leisurely pace, with Blanchard working hard to steer the conversation to Lamar's twin passions of sports and old movies. The tactic seemed to work, and by the time he pulled his dessert over in front of him she could see he was almost relaxed again.

"You ought to watch that stuff," she commented, eyeing his chocolate pudding. "It'll give you zits like you wouldn't believe."

"Old doctors' tale," he retorted around a mouthful. "Nothing here that isn't healthy for a growing boy like me."

"Oh, come on, you stopped growing at least two years ago—"

She broke off. Lamar had looked up from his bowl and was staring over her shoulder with a strange look on his face. She turned, just as a pair of uniformed policemen stopped on either side of her. "Mr. Walker Lamar?" one of them said, his gaze steady on Lamar.

Lamar's eyes flicked to Blanchard, then back to the policemen. "Yes?" he said, the word half statement, half question.

The second cop started around the table. "Please keep your hands on the table, sir," the first said.

"Is there a problem, officer?" Blanchard asked, a sudden dread twisting through her stomach.

"Afraid there is, ma'am," the cop said as his partner gave Lamar a quick frisking and then pulled out his snugcuffs. "Seems that sometime between twelve-thirty and one o'clock this afternoon a man named Eliot Griffin was murdered in his office across the square."

Blanchard looked at Lamar, his eyes wide in a horror-struck face. "And you think *Walker* had something to do with it?" she demanded.

"It seems likely, ma'am," the cop said. "Seeing as his fingerprints were all over the murder weapon.

"Mr. Lamar, you have the right to remain silent. . . ."

Within an hour she got word that McGee had taken her off her scheduled owl-shift floater duty, citing the potential emotional stress of Lamar's arrest. It took fifteen minutes to convince him she could handle it, and though he reinstated her he made it clear that he thought she was letting professional pride and plain simple mule-headedness do her thinking for her. At the time she half agreed with him, and wondered if perhaps she should have gone home instead.

By eight that evening, though, she was very glad she hadn't.

"Saw you on TV tonight," a familiar voice said into the fog.

She looked up, brushing away the mental wool, as Carstairs sat down across the duty room table from her. "I imagine half of Los Angeles saw me," she countered tiredly.

"Probably," he nodded. "Rough day, huh?"

She closed her eyes briefly. "I used to do police psychology work, sometimes dealing with the most infamous twisted minds you'd ever seen. People on the level of Bundy or Manson; and I *never* got the media attention from any of that that I did this afternoon."

He nodded again. "Scary, isn't it? You'd think that after ten years Soul-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

minder wouldn't be such a media magnet. But it is." He glanced around the empty duty room. "At least you found a cozy place to hide."

"A case of my subconscious being smarter than I was," she admitted. "I'd talked McGee into letting me stay here tonight long before the media dragged me into the number two ring of their circus."

"You did a good job, if that helps any," he offered. "At least on the interview I saw. They kept trying to get you to convict Lamar right there on the spot, and you kept politely refusing to play ball."

"He's not guilty." The words sounded more reflexive than really convincing. Or convinced. "Walker wouldn't have killed anyone. He *wouldn't*."

Carstairs tapped his fingertips gently on the tabletop. "There've been quiet suggestions that maybe Lamar wasn't doing so well. That maybe the strain of being a Pro-Witness might have pushed him over the edge."

She grimaced, that early-morning argument with McGee flashing through her mind for the umpteenth time that day. "I've heard those suggestions, too," she growled. "The people making them don't know what they're talking about. Walker isn't the type to spew his internal pressures out on other people. He'd just turn it inward on himself."

"OK," Carstairs said. "But if Lamar didn't do it—"

"And there's one thing the cops so far don't seem to have considered," Blanchard cut him off. "Richardson's Garden Spot—the place the murder knife was taken from?—Walker and I had lunch there less than a week ago. Someone could easily have picked up the knife he used and kept it until now."

Compton shrugged. "In theory, sure. The Smithson 88 fingerprint scanner they used at the scene is notorious for reading latent prints like they were fresh. Though a proper confirmation check ought to pick up something like that."

"Assuming they bother to make one," Blanchard said bitterly, dropping her gaze back to the tabletop. "Everyone seems to have made up their mind already that Walker's guilty."

"Well . . . not *every*one."

She frowned up at him. "What do you mean?"

His eyes were thoughtful on her. "Tell me, Doctor . . . when exactly was Eliot Griffin killed?"

"Between twelve-thirty and one this afternoon."

"How do you know?"

"Because—" She paused. "Because that's what the cops told me."

"Yeah, that's what they told everyone," he nodded, that thoughtful expression still there. "About half an hour ago I finally got to wondering how in hell they'd pinned down the time of death that neatly. So I did some checking."

"And?" she prompted.

"And it turns out," he said quietly, "that the cops called *us* just before one-forty to find out if we knew where Lamar was. The operator told them he was in the cafeteria. And then they asked whether he'd been checked out at all in the previous hour or so."

Blanchard stared at him, the mental fog burning abruptly away. "My God,"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

she breathed. "And of course she obligingly told them he'd been out of the building between twelve-thirty and one."

"Uh-huh." Carstairs pursed his lips. "So I did a little more checking. It turns out that Griffin's secretary was out of the office from noon to one. The whole hour, not just the second half."

She stared at him. "You realize what you're saying?" she asked, her voice trembling with sudden emotion. "You're suggesting . . ."

He nodded. "That our runaway witness Holloway is at least as good a suspect as Walker Lamar is."

Blanchard took a deep breath. The implications . . . Abruptly, she reached over to the tabletop MiNex console, keyed in a location request. "Good; Katovsky's still here—third-floor conference room." She got to her feet. "Let's go."

"Wait a second," Carstairs cut her off, catching her hand. "Before you go charging in on the director, take a minute to think about what we're going to be telling him: that a man legally dead might have committed a murder. You think the media circus today was bad, just wait until they get their teeth into *this* one."

She glared down at him. "Are you suggesting that we just keep our mouths shut and let them throw Walker to the sharks?"

"Of course not. I'm just warning you not to expect peals of joy from the upper echelons over the news. Lamar is a city employee, under the jurisdiction of the D.A.'s office, and if he's guilty they'll get the bulk of the public flak. The minute you bring Holloway into it, you drag Soulminder in, too."

"Soulminder thrives on publicity," she said briefly. "You coming or not?"

He stood up, releasing her hand. "I'm right behind you."

There were three men waiting in the receptionist's niche just outside the third-floor conference room when they arrived; men whose quiet watchfulness and efficiency, Blanchard would reflect later, ought to have given her some warning of what she was about to walk into. But she was tired and preoccupied; and so she just stood beside Carstairs, her thoughts on other things, while one of the loiterers held a brief intercom conversation with someone inside the conference room and then opened the door for her. Nodding her thanks, she strode through the opening—

And came to an abrupt stop.

"Dr. Blanchard," Los Angeles Director Robert Katovsky said gravely into the bright fog that seemed suddenly to be interfering with her vision. "Come in and meet our visitors." Without waiting for a response, he half turned, gesturing to the three men seated across the small circular table from him. "This is Frank Compton, overall head of Soulminder security; Murray Rothe, chief legal counsel for the corporation; and I imagine you recognize Dr. Adrian Sommer."

With an effort, Blanchard found her voice. "It would be difficult," she said, "to find an adult in the civilized world who *wouldn't* recognize Soulminder's creator."

"Co-creator, please," Sommer corrected. He sounded less dynamic, somehow, than he always appeared in TV interviews and newscasts. "Mr. Katov-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

sky tells me you were Walker Lamar's Soulminder liaison."

Some of the dazzlement cleared. "I still am," she countered in turn.

Katovsky harrumphed warningly, but Sommer merely smiled. "I stand corrected. Please sit down—you too, Mr. Carstairs—and tell us what's on your mind."

Blanchard took the chair across from Sommer, Carstairs sitting down beside her. "I want to apologize for barging in on you like this," she began. "Although—" she made a quick scan of their faces as a new thought suddenly occurred to her—"given your presence here, Dr. Sommer, perhaps we don't have anything new to tell you, after all."

Katovsky made a face. "If you're referring to the news that Walker Lamar isn't the only viable suspect in the Griffin murder, then you're correct."

Blanchard looked at Sommer. "Can I assume you plan to release that news sometime in the near future?"

The other raised his eyebrows slightly. "You can sit in on my press conference tomorrow morning if you'd like. Were you thinking we might not?"

"It's a long way from Washington," she said. "You could have made the announcement hours ago."

Katovsky harrumphed again, but Sommer waved him silent. "We suspected we had a problem right from the start," he said, meeting her gaze without flinching. "We didn't *know*, however, until about an hour ago. At that point it seemed best to try and collect some more facts before flooding the public with what could easily become a morass of confusing and possibly self-contradictory information." He looked at Compton. "Frank?"

"We got the final police report on the murder weapon a few minutes ago," the security chief said, his cool eyes steady on Blanchard. "Lamar's prints were definitely fresh. They were also superimposed on another set, presumably those of the person who'd used it last."

Blanchard felt her lips twist. "Meaning that no one picked up the knife he used last week to try and frame him with it?"

"Basically," Compton nodded. "Actually, it *is* still barely possible that someone did that, but it would've been one hell of a slick job—ditto for getting those little blood stains onto the underside of Lamar's wrist. Which, by the way," he added, looking at Sommer, "the lab says definitely came from the victim."

Sommer nodded. "All of which presumably takes this out of the realm of a random framing. As to non-random framing . . ." He looked at Rothe, and raised his eyebrows.

"At last check, my people were about halfway through the complete national list of state and local Pro-Witness cases," the Soulminder attorney told him. "So far they haven't found anyone who might have the money or contacts to try and throw this particular kind of monkey wrench into the program generally. We're still looking."

"All right," Sommer said. "We'll leave that line open—" his eyes hardened, just noticeably—"But until and unless you find something, we're going to have to assume that Lamar's hand did indeed wield the murder weapon.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"The only question being, who was using that hand at the time?"

Carstairs stirred in his seat. "It seems to me that there ought to be *some* kind of physical evidence that would let us determine which one. Odd bloodstains, timing—*some*thing."

"One would think so, yes," Sommer nodded. "But so far, nothing like that has surfaced."

"Wait a minute," Blanchard said slowly. In her mind's eye she saw Lamar shuffling out for his post-transfer walk. "When we found Holloway, he was carrying his blazer folded across his arm. When Walker left a few minutes later . . . I think he left the blazer in the transfer room."

"He did," Katovsky nodded. "We spotted that when we reviewed the videotape of the transfer operation. Unfortunately, the police lab's already gone over the blazer, and there's no blood on it anywhere." His cleared his throat uncomfortably. "They said that Griffin's own jacket absorbed most of . . . what came out."

"Was it checked for dust signatures, then?" Carstairs persisted. "If Holloway was the killer, he would have had to put the coat down somewhere first—he couldn't have known that the blood wouldn't spurt all over it."

"They say it's been checked for everything," Katovsky told him. "One assumes they know what they're doing."

"Carstairs brings up a good point, though," Sommer said. "At the moment the traditional elements of method and opportunity fit both men equally well. It may indeed come down to some obscure bit of knowledge like whether one of them knew how a knife wound like that would bleed."

Rothe clucked his tongue softly. "If it does, you can kiss a conviction goodbye," he warned. "Probably the trial, too; any D.A. with half a brain would know better than to bring a case based on a cobweb like that."

"Or in other words," Compton said, "we need to find a motive."

"Assuming there *is* one," Sommer said, his eyes on Blanchard.

"Walker was beginning to develop some personality problems, Dr. Sommer," she said stiffly. "He was not, however, going psychotic."

"I'll accept that," Sommer said. "At least for the moment. Tell me about Mr. Holloway's mental state."

Blanchard felt her stomach tighten. "The man was murdered six months ago. He's spent those six months locked in limbo in a Soulminder trap, the monotony punctuated only by brief intervals of being stuffed into a strange and totally unfamiliar body so that people can ask him to relive his death over and over again. What kind of mental state would *you* be in?"

"That's enough, Doctor," Katovsky said, his voice dark with official menace.

"It's all right, Bob," Sommer said. "As it happens, Dr. Blanchard, I *have* spent time in a Soulminder trap. I remember it being quite peaceful, and not monotonous at all."

Blanchard swallowed. She *had* known that. "I'm sorry, sir."

"As to the rest of it, though, you make a good point," Sommer continued as if she hadn't spoken. "One expects God to inform you of your death, not

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

some assistant district attorney from Los Angeles." A shadow of something like pain flicked across his face. "Some have taken it very well; others very poorly. We need to know which category Holloway falls into." Again, his eyes hardened, just that little bit. "And we need to know fast."

"I suppose you'll want *me* to talk to him," she said, a familiar acid pain jabbing briefly at her stomach. For a moment she was back in St. Louis, preparing to examine yet another suspected psychopath. "Will tomorrow morning be soon enough?"

Sommer looked at Rothe. "Murray?"

"We expect to have Lamar released into our custody by noon tomorrow at the latest," the lawyer said briskly. "So any time after that will do."

Sommer nodded and glanced at his watch. "Let's schedule a transfer room for one o'clock, then—"

"Just a minute," Blanchard cut in as it belatedly hit her. "You're not suggesting we use *Walker* for the transfer, are you?"

Rothe's forehead wrinkled. "Of course. Why not?"

"Because—" She floundered for words, fighting to get past the mind-numbing horror of the whole idea. "We can't ask Walker to let Holloway into his body again," she said at last. "If he used Walker to commit a murder—" She looked around the table, saw nothing but puzzlement there in their faces. "Don't you *see?*"

"Not really," Sommer said, his tone quiet but firm. "But I'm afraid it doesn't matter whether we do or don't. We have no choice but to use Lamar on this. You've never known Holloway in any other way—never known his expressions or voice patterns or mannerisms in any other body. If we switch him to some other Pro-Witness, you'll have no chance at all of reading anything from his responses."

Blanchard exhaled quietly. He was right; on a purely logical level she could see that. But on a gut level . . . "Yes, sir," she said. "For the record, I don't like it."

"I don't especially like it either," Sommer told her. "But it has to be done." He looked around the table. "And with that, I think we've done all we can do for the moment. We'll meet back here at twelve-thirty tomorrow afternoon to discuss developments. After which, we'll see what Mr. Holloway has to say."

Twelve-thirty tomorrow, Blanchard thought bleakly as she headed from the conference room, leaving the others still collecting notes and papers behind her. Sixteen hours away . . . and then she would have to tell Walker that his body was once again going to be used by someone else. Not by a victim this time, but by a suspected killer.

Which gave her just those same sixteen hours to talk Sommer and Rothe out of it.

Or to identify the killer herself.

The door to the late Eliot Griffin's sixth-floor office was unguarded, save for the wide yellow tape with "POLICE LINE—DO NOT CROSS" endlessly repeated in black letters that had been stretched across the doorway. The lack of a guard was in itself mildly surprising, given the media attention: what was even more surprising was the fact that

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the door itself was open a crack. *The guard must be inside,* she decided, giving the door a gentle push and ducking low under the yellow tape. Mentally rehearsing the story she'd worked out during her morning shower, she stepped into the office.

It was impressive. The news reports had called Griffin a high-caliber investment counselor: looking around, she saw for the first time just how much wealth and success that terminology implied. From the rich, yet tasteful, carpet to the equally rich and equally tasteful curtains, everything in the room struck the perfect balance between leisurely elegance and hardheaded business acumen.

Everything except the white tape outline across the top and front of the polished mahogany desk. . . .

"Who the hell are you?"

She jumped, twisting around to her right. Framed in the doorway to an unsuspected second room was a glowering cop, his hand resting none too subtly on the butt of his automatic. "I'm Dr. Carolyn Blanchard," she told him between stiff lips. Suddenly the story she'd dreamed up didn't sound nearly as convincing as it had an hour ago. "I'm with the Soulminder office, working on the Griffin murder."

The cop cocked his head slightly to the side, his eyes never moving from Blanchard. "Is she?"

"Close enough," a second voice grunted; and behind the cop, Frank Compton stepped into view. "You can put her down as being with me."

The other shrugged, dropping his hand to his side. "OK, if you say so." He looked her up and down once, shrugged again, and moved toward the taped doorway. "I'll be outside if you need me."

The door clicked solidly shut behind him. "Thanks," Blanchard said to Compton. "I couldn't tell whether he was going to arrest me or shoot me."

Compton's lip twisted. "Don't worry—he wouldn't have shot you. Too much paperwork. What are you doing here?"

She forced herself to meet that icy gaze. "If I'm going to talk to Holloway about this, I need to know as much as I can about Griffin and his death. It seemed simplest to come directly to the source."

"Uh-huh." Compton's expression seemed to sour a bit more. "And if you just *happened* to stumble on something along the way that would solve the case for us . . . ?"

She felt her face warming. "I'm not just some self-appointed amateur detective who wandered in off the street, Mr. Compton," she bit out. "I'm a trained observer who specializes in building personality profiles from random bits and pieces of data. I've got as much chance of seeing something significant here as you do."

For a long second she thought maybe she'd overdone it. But Compton merely cocked an eyebrow and gestured to the room. "Help yourself, Doctor. Tell me what significant things you see."

She looked at him a moment longer. Then, almost against her will, her eyes drifted to the white tape on the desk. "How did it happen?"

"From the penetration angle and position of the body, the police think Griffin was leaning over his desk shaking

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

hands with his killer when he was stabbed."

"A left-handed blow, in other words."

"Yeah, but that doesn't buy us anything," Compton said. "Doesn't take a left-handed man to hold someone pinned across a desk while he stabs him. Anyway, both Lamar and Holloway are right-handed."

Blanchard nodded, breaking her gaze from the white tape and brown bloodstains and letting it drift across the desktop. Almost compulsively neat, with two stacks of papers in the front left corner and a computer in the front right. "Has anything been taken from this room?" she asked, starting toward the terminal. If Griffin had been working on the computer when he was killed . . .

Compton snorted. "Sure. Griffin's appointment calendar, his client list, his scratch pad, his phone list, his pocket memo computer, every diskette the police could find, and the hard disk out of that PC there. They've also started the wheels rolling to get them into his E-mail file, his Wall/Street/Link file, his three library/infonet records, and his GamesNet file. Not to mention his personal banking records, his business banking records, and all his credit card records. Anything we've missed?"

She sent a glower in his direction. "Nothing springs to mind. What about that room?" She nodded at the door he'd come in by.

"It's a small bedroom," he told her. "Looks like Griffin was accustomed to late nights and early mornings."

Or else was accustomed to specialized entertainment for special clients. "They've cleaned that out too, I presume?"

"Pretty much."

She sighed and let her gaze drift around the room. Much of the right-hand wall next to the bedroom door was given over to a floor-to-ceiling bookshelf, loaded with both leather-bound books and a considerable number of crystal objects. The love of crystal was repeated on his desk, where a handful of tiny knickknacks lined both sides of the front edge, the ones that had presumably been in the middle having been scattered onto the floor. Behind them, lying with its edge precisely parallel to the two piles of papers, was a gold-handled letter opener. "Whoever the killer was, I don't think he'd ever been here before," she said.

"Because if he had, he'd have known about that lovely letter opener and wouldn't have bothered swiping a knife from the restaurant," Compton agreed.

Behind the desk the tall windows looked out on the buildings across Ridley Square, with the top corner of the Soulminder building just visible through one of them. On the left-hand wall were four picture frames, three with modern paintings in them. In the fourth . . .

She frowned, stepping over for a closer look. Inside the matting was a narrow article from *Time* magazine—a sidebar, probably, to a longer story—with a photo of a blandly smiling man at the top of it. A man sitting at a familiar-looking desk. The desk, in fact, that was ten feet away.

"Yeah, it's an article about Griffin," Compton said from behind her. "Go ahead—read it."

From his sumptuous office overlooking Ridley Square—and,

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

perhaps ironically, the Los Angeles Courthouse Annex—Eliot Griffin sees dozens of clients, makes a good deal of money, and scoffs at the suggestion that he and Trintex are in any way out of the ordinary. "You get a group of people who beat the odds—any group, any type of odds—and you'll have people who think they're cheating," he claims. "In our case, it was a group of sore losers in the financial market and an SEC that has more time on its hands than it knows what to do with."

Griffin has had his share of experience with both sore losers and the SEC. Growing up in the prairies of rural Nebraska, he was continually having to prove himself to teachers and childhood friends . . .

She finished the article, turned to find Compton watching her. "Are the allegations here true?" she asked.

He shrugged. "No one really knows for sure. Or I should say that no one knows well enough to take him and his group to court. Yet."

"You mean these Trintex people?"

"Yeah. The main article had a profile of the whole gang. You've never heard of it?"

"If I did, I don't remember."

"Um. Well, basically, Trintex is a loose group of high-tech investment advisors scattered across the country, all highly successful, highly adept at generating money for their clients, and—" he cocked his head slightly—"allegedly playing off each other's balance sheets to create assets and profits on paper that aren't really there. An updated version of the old revolving-fund con scheme. Or so the SEC thinks."

Blanchard looked back at the article. "And he frames this to put in his *office?*"

"Oh, they've got chutzpah to burn," Compton snorted. "The Washington edition carried a sidebar interview with the New York member of the club, and he apparently has *his* framed in his office, too."

She nodded, studying the photo at the top of the article. Griffin was all smiles and sincerity, and yet at the same time exuding the air of a total hardheaded business professional. A perfect match for his office decor. "You can just see the top of the Soulminder building in the picture," she commented. "There, at the edge of the curtains." She frowned, skimming the article again. There was something wrong here. Something she couldn't quite put her finger on . . .

"Yeah," Compton said. "Not exactly the kind of neighbors we really like to have. Did you happen to notice the date of the article, by the way?"

She dropped her eyes to the bottom of the page. There it was—

She stared at it, a hollow feeling twisting at the pit of her stomach. "Three months ago," she murmured.

"Three and a half, to be precise," Compton said.

And Holloway had been murdered almost six months ago. Locked away from the world in a Soulminder trap ever since . . . "It doesn't prove anything," she said, unwilling to turn and face Compton. "Holloway could have heard

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

about Griffin in some other way before he was killed."

"Sure," Compton agreed. "He could have read about him somewhere else, or maybe had a friend or relative get screwed over by the guy. But so far this story seems to be the first time any mass-media people outside the financial community have paid any attention to the group. Or to Griffin."

"What you're saying is that the only one who could possibly know that Griffin was a shady operator was Walker," she bit out. "Is that it?"

"That's part of it," Compton said. His voice was suddenly grim. "The other part is whether whatever Griffin's been doing was really worth killing him for."

She stared at the photo. The blandly smiling con man. "Someone might think so."

"Someone who was borderline psychotic, maybe?"

Deliberately, she turned away from the framed article. "I'm going downstairs to check out the restaurant," she said, keeping her voice level. "You coming?"

"I've already talked to them," Compton said. "But help yourself. Just don't forget we've got a meeting at twelve-thirty."

"Don't worry. I'll be there."

"Another Soulminder person, huh?" the cashier at Richardson's Garden Spot said, peering at Blanchard's ID. "Boy, between you, the police, and the reporters this place has sure been popular lately."

"I know, and I'm sorry to bother you," Blanchard told her, slipping the ID back into her wallet. "I'd just like to ask you a couple of questions, if I may."

The cashier sighed. "Yes, I was the cashier on duty yesterday between twelve and one; yes, the place was crowded to the gills the whole hour. No, I don't remember anyone with Walker Lamar's face coming in during that time; yes, we've checked with all our employees, and none of them remembers seeing him, either. Yes, we *are* missing one of our steak knives; no, there's no way we can tell which table it was stolen from; yes, it was most likely from one of those six tables by the front window; no, nobody's found any useful fingerprints there. Did I leave anything out?"

"You *have* been through the wringer, haven't you?" Blanchard said with a commiserating smile.

The cashier nodded. "And there're never any new questions, either—that's the part that really gets to me. Don't you guys ever talk to each other?"

"Yes, but obviously not often enough." Blanchard thought a moment. "OK, let's see if you've heard these. Do you routinely set out steak knives with your table settings, or just bring them with steak orders; and if not, can you pull a list of everyone who ordered steak yesterday?"

"Sorry, but the last Soulminder guy already used those. Yes, for lunch we usually set steak knives out; and yes, we *can* do a partial cross-reference, but only for those people who paid with magic plastic. About 30 percent of our customers use cash, and there's nothing we can do about them."

"The bills themselves don't have an automatic time stamp on them?"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"Nope. We do all the checks here by hand—part of our old-fashioned charm."

Blanchard grimaced. A blind alley. "I see. Well . . . thanks for your time. I appreciate it." She stepped back from the counter, turned around—

To find Frank Compton standing a few feet behind her. "Find out anything new?" he asked.

"Not really," Blanchard said. "You always skulk around eavesdropping on other people's conversations?"

He raised his eyebrows politely. "Believe me, Doctor, if I'd wanted to listen in without you knowing, you wouldn't have."

"Yeah." She shifted her attention to the tables by the window that the cashier had mentioned. "It would have been trivial to do, wouldn't it?" she murmured, largely to herself. "All anyone had to do was walk in, peer over the railing back here as if looking for someone in the main dining room, and then walk out with a knife up his sleeve."

"Perfectly simple," Compton agreed. "And then out the door, turn left, next building over, up to the sixth floor, and hey presto—someone's disappeared."

Her stomach tightened. "You don't have to be flippant about it." She peered out the window, at the Soulminder building visible to the side of the Ridley Square greenery. "I don't suppose it would do any good to suggest that half an hour wouldn't have been enough time for either Walker *or* Holloway to have done all this."

He shook his head. "I walked the route this morning. The timing's a little tight, but no real problem." He eyed her. "Particularly if the murderer had already tested out the timing himself."

"Meaning Walker, of course," she said coldly.

"He has a subscription to *Time*."

"Big deal—so do I," she countered. "So does a reasonable percentage of the greater Los Angeles population. What does that prove?"

"It doesn't *prove* anything," Compton said patiently. "It's just one more pointer in Lamar's direction. He had access to that article on Griffin; Holloway didn't. Information, Dr. Blanchard—remember what Dr. Sommer said about information?"

"I'm not likely to forget," she grimaced. She looked at the tables again, a sudden thought striking her. "You said there were a set of prints under Walker's on the knife, didn't you?"

He nodded, fishing a set of heavy-looking sunglasses from his coat pocket. "Yes, but they don't do us any good."

"Maybe they do," she said, feeling the stirrings of cautious excitement. "If we can track down the person who used it, maybe we can find out what time he left the restaurant."

"Nice idea," Compton said, slipping the sunglasses on. For a moment he stared through them in silence, as if looking at something. "Unfortunately," he continued abruptly, "it turns out that the knife was from a clean table setting. The other prints belong to one of the busboys, and he was setting tables all morning."

Blanchard grimaced. "You've thought of everything, haven't you?"

"That's what I'm paid for." He pulled the sunglasses off and slipped them back into his pocket. "Come on, we're wanted back at Soulminder."

"Is something wrong?" Blanchard

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

asked, hurrying to catch up as he turned and strode out onto the sidewalk.

"No, just the opposite. Murray got Lamar sprung already; they're on their way in. Means we'll be able to talk to Holloway now, instead of this afternoon."

Blanchard swallowed hard. "Oh," she said. "Great."

The indicator lights changed color, and on the table Lamar's body twitched to life again. "Mr. Holloway?" Blanchard asked.

He turned his head from his contemplation of the ceiling to look at her. "Hello, Dr. Blanchard," he said, blinking a few times. "Boy, that didn't take long. The jury ready with its verdict already?"

"Not exactly," Blanchard told him, watching his face closely. The muscles were tight; but then, that was more or less normal for Holloway's transition periods. "Something else has come up," she continued. "There are some people here who want to ask you some questions."

He blinked again, eyes narrowing as he seemed to suddenly become aware of the silent group standing behind her. "Is something wrong?" he asked, his voice trembling slightly.

Compton took a step forward. "Mr. Holloway, we'd like to know exactly where you went yesterday after your court testimony," he said. "During the time you were alone, I mean."

A cheek muscle twitched. "I don't understand. All I did was walk around Ridley Square for a while. . . ." He trailed off, eyes coming back to Blanchard. "There *is* something wrong, isn't there?"

She nodded. "Someone's been killed," she said, as gently as possible. "We need to know where you went yesterday." A sudden flash of inspiration—"To know if you might have been in a position to see anything."

The tension lines didn't go away. "I just went . . . *around*. You know, around the square. I touched some trees, smelled some flowers, looked in a couple of shop windows, watched the other people. . . ." He waved a hand helplessly.

"Did you go anywhere near Richardson's Garden Spot?" Compton asked. "That's that restaurant a quarter of the way around the square from here."

He shook his head, shoulders hunching briefly in a nervous shrug. "I don't know. Probably I went past it sometime, but I don't know. I wasn't, you know, really paying attention to things like that." He swallowed. "Who was killed? Was it someone I knew?"

"The man's name was Eliot Griffin," Blanchard told him. "An investment advisor. Does the name sound familiar?"

He shook his head. "Not really. Sorry."

"That's OK." Blanchard pursed her lips. "All right, then, try this. Think back to when you returned here yesterday, just before we put you back into Soulminder. What were you feeling?"

He gazed up at her, not quite suspiciously. "I don't understand."

"Were you feeling angry, for instance?" she offered. "Frustrated by the trial, or perhaps by the way Austin

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

treated you during the cross-examination?"

Slowly, he shook his head, eyes gazing at infinity. "I was a little sad," he said softly. "You know, seeing trees and sunshine for almost the last time." A tight smile twisted his lips. "You know that old saying: what would I do if this were the last day of my life? I thought about that a lot."

"And what did you decide?"

He shook his head wordlessly.

Blanchard looked back at Compton, and at Sommer and Katovsky and Rothe behind him. "Anything else?"

"Not right now, no," Sommer told her.

"So what happens now?"

Blanchard looked back at the table. "You'll be going back into Soulminder," she told him.

"And I'm afraid you'll have to stay there for awhile," Sommer added. "At least until we resolve this mess. There may be other questions we'll have to ask you."

A cheek muscle twitched. "I'll do anything I can to help."

"Thank you." Sommer looked at the doctor, nodded. "We'll talk to you later, then."

His cheek twitched again as the hypo pricked his arm. His eyes closed . . . and he was again dead.

"Interesting," Sommer murmured from behind her, his voice sounding thoughtful. "Well. Gentlemen, Dr. Blanchard—shall we adjourn to the conference room?"

"I'd like to stay here until Walker's back in his body," Blanchard said. "If that's all right."

"As a matter of fact," Sommer said quietly, "it's not all right. What I have to say is going to be of extreme interest to you."

She stared at him, a chill running up her back. "Yes, sir," she said.

"I'd like to begin by hearing your opinions about our little talk with Mr. Holloway," Sommer said when they were all sitting around the conference room table again. "Dr. Blanchard, why don't you begin."

She shook her head, neck muscles feeling tight as she did so. The guarded tightness in Sommer's eyes could only mean bad news. Bad news, and almost certainly about Walker. "I'm afraid I don't have much to offer," she said. "Holloway was obviously very tense—I'm sure all the rest of you could see that. But whether it stemmed from guilty knowledge or everything else about his current situation, I couldn't tell." She hesitated. "That bit about keeping him in Soulminder for a while longer got a definite reaction, too."

"Yes, well, I'm afraid none of us has any choice about that," Katovsky grunted. "The D.A.'s office has already made it clear that we can't release Holloway's soul until this mess is sorted out. Even if that includes bringing Lamar and Holloway to trial."

"Which we'll all hope like hell it doesn't," Rothe added, hissing softly between his teeth. "We could be years seating a jury that would be willing to convict a murdered man."

"How about you, Frank?" Sommer asked, turning to the security chief. "You hear or see anything out of the ordinary?"

"Not really," Compton shook his

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

head. "For a while it looked like he might fall into the old trap of forgetting to ask who'd been killed, but he got to that eventually. He also didn't seem to know anything about the murder that he shouldn't, the other classic trap. I'd say we came out about as flat inconclusive as we went in."

Sommer nodded. "Thank you. Well. Any other comments? Anyone?"

No one spoke, and Blanchard braced herself. *Here it comes.*

"Well, then." Sommer pursued his lips. "Up to now we've been concentrating on which of the two suspects actually held the murder weapon, letting the question of motive slide temporarily into the background. As of early this morning, I'm afraid we can no longer do that." He touched a folder lying on the table in front of him. "This is a standard medical/psychological report on a certain Soulminder employee, dating from several months ago up until the present. It details increasing stress levels, generated, according to the analyst, by job-related frustration and anger."

He took a careful breath. "I have to ask you, Dr. Blanchard: why do you hate Soulminder?"

It was so totally unexpected that for a half dozen heartbeats she couldn't even speak. "I don't hate Soulminder," she managed at last. "Who said I did?"

Sommer shrugged slightly. "You're a psychologist—you know how these conclusions are arrived at."

"And I know that six times out of ten they're completely wrong," Blanchard retorted, trying to whip up some anger through the numbness clouding her brain. "This being one of those six."

"Is it?" Sommer asked quietly.

She glared at him . . . but the righteous indignation was all an act, and down deep she knew it. There was no anger down there for her to feel, only a weary sort of relief. The burden was coming out at last. Probably for the best. "I don't hate Soulminder," she said with a sigh. "I hate the Pro-Witness program."

Sommer's eyebrows lifted slightly. Perhaps he'd expected her to waste more time denying it. "You mind telling us why?"

"I hate it for the same reason I hate the idea of perfectly fertile women hiring surrogate mothers," she bit out. "Or the idea of people donating blood or organs for cash on the barrel. It's all variations on the same theme: poor people like Walker selling their bodies for the convenience of the rich."

Katovsky snorted. "Oh, for—"

He stopped at a gesture from Sommer. "I understand what you're saying," Sommer said. "But the Pro-Witness program is hardly in the same class as those others. We're not talking convenience or vanity here, but justice."

"Justice?" Blanchard shook her head. "I'm sorry, Dr. Sommer, but I can't call anything justice that only works for a small knot of rich people who had the buckets of spare cash necessary to buy into a Soulminder computer before they were killed."

"Justice has always been skewed toward the powerful," Rothe pointed out. "So have most other things in life. Besides which, if you want to be strictly technical about it, isn't anyone who

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

works for someone else renting out his or her body?"

"It's not the same," she insisted. "It's a matter of dignity, of—" She shook her head, suddenly tired. "The hell with it. If you can't see the difference, I can't explain it." She looked at Sommer. "You didn't bring this up just to have a theoretical debate."

"No, I didn't." Sommer hesitated. "It's occurred to us, Dr. Blanchard, that assuming either Lamar or Holloway killed Griffin on his own requires us to stretch things a little too far. Lamar, for example, had access to that article on Griffin; but he wouldn't have known that Holloway had been out of touch for half an hour, thereby giving him an alibi. Holloway, on the other hand, apparently knew that Lamar always took a solitary walk after his Pro-Witness stints—"

"He knew that?" Katovsky frowned. "How?"

Blanchard gritted her teeth. "I probably mentioned it to him at one time or another. He asked a lot of questions about Walker."

"And he made an off-hand reference to it just before going back into Soulminder yesterday afternoon," Sommer added. "So he knew that Lamar would be out for awhile, giving him an alibi; but he *didn't* know about Griffin's shady dealings." He looked hard at Blanchard. "Do you see where we're going with this, Doctor?"

"It would be hard to miss it," she said bitterly. "You think I set the whole thing up. Talked either Walker or Holloway—or both of them—into murdering a total stranger for me. I presume my motive was to somehow discredit the Pro-Witness program?"

"It's the most plausible motive we've come up with yet," Compton put in coolly. "Why else would you stay with a program you hate?"

"It may come as a shock to you," she growled, "but there are people in this world who stay where they're needed for the simple reason that they *are* needed. Who's going to look out for Walker and the others if I go? Certainly not any of you—you're all so madly in love with either the money or the gosh-wow technology that you can hardly see straight."

"That's enough, Doctor," Katovsky snapped.

"Why?" she retorted. "What're you going to do?—fire me on the way to the D.A.'s office?" She looked back at Sommer. "Did it happen to occur to you that a person who's concerned with the quality of other people's lives is hardly the type to commit cold-blooded murder?"

"It did," Sommer conceded. "But as Frank said, it's the most plausible motive we have. The only other option at this point is that either Lamar or Holloway went homicidally insane."

Blanchard took a deep breath. "I didn't kill Eliot Griffin," she said. "Nor did I aid or abet whoever did. If that's all, I'd like to see Walker before they take him back to jail."

Sommer gazed at her for a moment, then shrugged fractionally. "All right. Frank will take you down. Although—" he added as she pushed back her chair and stood up—"there's really no rush. Murray's arranged to have Lamar re-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

leased into our custody. He'll be remaining here, at least for now."

"Good," she said shortly. "He'll probably need some counselling, after what's happened. This way he can get it from his cellmate."

It was as good an exit line as any. Turning, she left the room. And tried to ignore the aching in her stomach.

He was lying curled up on the cot in his room when they let her in. Curled up, watching her with dull eyes. "Walker," she nodded in greeting as the door closed behind her. "So. How are you doing?"

For a moment he didn't respond. Then his shoulders hunched a little. "OK. I guess."

"That's the spirit," she said. "I don't believe you, of course, but that's the spirit."

He shrugged again. Crossing the room, Blanchard snagged the single chair and pulled it next to the cot. "I understand Katovsky's made arrangements to keep you here, instead of sending you back to jail," she commented.

"Probably so it'll be easier to do all their mental testing on me," he muttered, his eyes on her.

Pointedly on her. "I'm not here as a psychologist, Walker," she told him gently. "I'm here as a friend."

"Yeah. Well . . . maybe." His eyes drifted away, to stare at the wall. "You know what really scares me about this? That maybe I really *did* do it. That I just sort of blanked out and killed the guy."

She sighed. "I don't know, Walker. I really don't. Under normal circumstances, I'd say you weren't the type to crack like that. In this case . . ."

"You think maybe Soulminder did something to me?"

"It's possible," she said. "This kind of body transference—well, the resident soul and body *do* affect each other. That's why there's a three-hour limit on it—supposedly, no significant alterations can happen in that time. But whether that's really true . . ." She waved her hands helplessly. "I just don't know. And I don't know how we'd prove it even if I did."

Lamar's forehead was furrowed in deep thought. "You're saying that, like, if Mr. Holloway wanted to kill someone that *I* might go ahead and do it later on?"

She shook her head. "Again, I don't know. I tried talking to Holloway about that a few minutes ago—asked him if he'd been angry or frustrated just before he transferred out yesterday. But he said that all he'd been was sad."

"Doesn't sound like something that would've made me go out and kill someone, does it?"

"Not really," she admitted. "Don't worry, though, we'll keep hammering at it."

"Yeah."

For a long minute he was silent. "You want to know the really funny part of it?" he said at last. "One of the reasons they hired me to be a Pro-Witness in the first place was that I knew a little about what was going on in the world. They said it showed I wasn't just some loser off the street trying to make crack money."

Blanchard stared at him. "They said *that?*"

"Oh, not to my face. I got someone to let me see the file they did on me a

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

couple months later." He shook his head. "And you know the first thing I did when I got my first paycheck? I went ahead and sent off to get *Time* coming to my apartment. If I hadn't . . ."

"It probably wouldn't have helped," Blanchard told him. "What mattered was that Holloway didn't have any access to the magazine at all. If you hadn't had a subscription, you still could've read it at the library."

"I never read magazines at the library," Lamar said. "Used to read 'em at the dentist instead."

Blanchard raised her eyebrows. "At the *dentist?*"

"Yeah. You know—in the waiting room. He always had piles of magazines laid out there."

"Old ones, probably, if I know dentist waiting rooms."

Lamar shrugged. "A little. Didn't matter much when I was a kid. I guess probably that's why I sent away for the subscription. So I could get 'em all new."

He launched into a story about how once he'd snuck back into the dentist's office the next day to return a magazine he'd borrowed overnight. . . . but Blanchard wasn't really listening. In her mind's eye, she caught a memory of Lamar, hunched over a fancy glass table, his dark hair blocking his face as he leafed studiously through a magazine. . . .

"Dr. Blanchard?"

She focused on Lamar's face, frowning up at her. "You OK?"

"I'm fine," she said, standing up and knocking on the door. If she was right . . . "I'll be back soon. Hang in there, and try not to worry."

* * *

"This is ridiculous," Assistant D.A. Dorfman griped as his secretary pored through the box of old magazines in the bottom of his coat closet. "Completely ridiculous. You and Holloway were in here exactly five times, and in each instance you came directly into my office or the deposition room and then went straight out."

"No," Blanchard shook her head, her eyes on the secretary. "On one of those occasions you shagged us out of the room for a few minutes so that you and Austin could confer in private."

"And you don't remember when that was?" Compton asked, shifting the bulk of his Smithson 88 fingerprint scanner to his other hand.

She shook her head again. "I've been to so many depositions and meetings here over the months—but I have a clear mental picture of Holloway sitting by the glass table in the waiting room reading a magazine."

"Holloway, or Lamar," Compton grunted. "Remember that Lamar has been here before, too."

"Yes, but not for months," the secretary said over her shoulder. "I checked my appointment book, and I would have remembered if a Pro-Witness came in unexpectedly—here it is."

She half turned, the copy of *Time* in her hand. "Who gets it?"

"I do," Compton said before Dorfman could answer. Plucking the magazine deftly from her hand, he carried it over to Dorfman's desk, opening it up to the page with Griffin's sidebar interview. Blanchard moved to the opposite side of the desk, craning her head sideways to reread the article as Comp-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ton unpacked the scanner part of the Smithson. There was still something about the write-up that bothered her. Something not quite right . . .

"Here goes," Comtpon muttered under his breath. He held the scanner over the left-hand page, and abruptly the office was bathed in an eerie ultraviolet-tinged light. The light cut off, and Compton repeated the procedure with the right-hand page. "OK," he said, tapping keys on the computer part of the unit. "Let's see what the city print files come up with. You looking for something?"

Blanchard shook her head, starting the article again from the top. "Yes, but I don't know what. There's something important here—I know it. But I can't seem to figure out what it is."

"It's just a normal article," he shrugged, leaning over to look at it. "Pretty much like every other newsmagazine interview."

"I know." Squeezing her hand into a frustrated fist, Blanchard shifted her gaze up to the photo. To Griffin, smiling professionally at the camera; to the expensive desk and curtains, framing that smile as if they'd been arranged in their positions for exactly that purpose; to the cloud-mottled blue sky outside the window, with the top of the Soulminder building just visible. . . .

And suddenly she caught her breath. "Compton—"

The last syllable was drowned out by an electronic beep. "Hang on a second," Compton grunted, reaching over to give a helping hand to the sheets of paper sliding out of the Smithson's output slot. Two of the papers were photocopies of the two magazine pages, dotted and smeared with the delicate patterns of dozens of fingerprints; the other two were lists of those prints' owners. She craned her neck—

"Bingo," he said, swiveling the listings toward her and checking the photocopies. "You were right on the money, Doctor. Here, here . . . and *here*. Walker Lamar's thumbprints, right where someone reading the magazine would hold it."

"Doesn't prove he read the sidebar, though," Dorfman shook his head.

"Oh, it proves it, all right," Compton countered. "You can see—right here—where he moved his hand so that he could read what his thumb had been covering up. No, he read the article, all right." He looked at Blanchard. "But all that does is bring us back to square one again."

She shook her head. "No, it doesn't. Because Griffin wasn't just a random killing—there's no reason why the murderer would have gone to a sixth-floor office if he'd just wanted any old victim."

"So he wanted someone who deserved to die," Compton nodded. "Or at least someone who came close to it. So?"

Blanchard gestured to the article. "So look at the interview again. Look at it *real* closely."

"I've read it through so many times that I've just about got it memorized," he growled.

She took a careful breath. "Then tell me what the article *doesn't* tell you."

For a long moment he frowned at her, and she found herself holding her breath, willing with all her might for him to see it. If he didn't—if it didn't therefore

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

strike him as at all significant—then it was probably nothing more than a figment of her own wishful thinking—

"I'll be damned," he said, very softly. "You're right. You're absolutely right."

"Right about *what?*" Dorfman said suspiciously.

Compton cocked an eyebrow at him, then turned back and began to reassemble his fingerprint scanner. "You've seen this picture, Dorfman. You can see the Soulminder building in the background, which says that Griffin's office building bordered Ridley Square. But *how did the killer know which building it was?*"

"Well, obviously—" Dorfman broke off, an odd expression flooding across his face.

"That's it, exactly." Compton straightened up, hauling the repacked Smithson off the desk. "You know what we're looking for, Doctor. Let's go to it."

He looked down at the article, tongue playing nervously across his lips. "No, I don't remember reading this," he said, looking up.

Looking up . . . but with his eyes never quite meeting Blanchard's. Or anyone else's in the deposition room, for that matter. "I'm sorry, Mr. Holloway," Dorfman shook his head, "but I'm afraid that won't wash. We found your fingerprints all over a copy of the article from my waiting room. A copy, I may add, that Walker Lamar never had any access to."

"I suppose I'll have to take your word for it," the other said, trying his best to sound huffy. It didn't really come off.

"So OK, let's assume I did read it. What then?"

Dorfman glanced at Blanchard, then at Sommer, Compton, and Rothe. "What then, Mr. Holloway," he said quietly, "is that, for whatever reason, you decided to kill Eliot Griffin. You want to tell us what that reason was?"

"I don't know what the hell you're talking about."

"Then look at that article again," Dorfman said, an edge beginning to form in his voice, "and I'll try to explain. Go ahead—look at it . . . and notice that nowhere in the article is Griffin's office address given."

For just the briefest instant the eyes flattened, the look of a man who suddenly realized he'd made a fatal blunder and that all was lost. But only for an instant. "Well, that's pretty much normal, isn't it?" he shrugged, the mask back in place. "Stories like this don't usually print addresses, do they?"

"Almost never," Dorfman agreed. "And it brings up a rather awkward question: namely, how did Griffin's killer know where to find him?"

"Probably from that photo." He waved at the article on the table with a hand that was just beginning to tremble. "You got that view through the window—I suppose someone could figure it out from that."

Dorfman shook his head. "No," he said. "It looks like it could be done, but it really can't. Not without special equipment or professional experience. The picture was taken too far back from the window—it doesn't show nearly enough outside detail for the exact location to be pinpointed. You vary the angle, position, and elevation of the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

camera and you can get almost the same view from offices all over that side of Ridley Square. I know; I sent a photographer there this afternoon to do just that."

The eyes flicked around the room; at Dorfman, at Blanchard and the other Soulminder people, at the court recorder quietly taking it all down. "Then I don't know how he did it," he muttered.

Again, Dorfman shook his head. "You miss the obvious, Mr. Holloway," he said. "Perhaps because you don't want to draw our attention to it. We understand . . . but you see, it's already too late for that. Mr. Compton, Dr. Blanchard and I went to the courthouse annex this afternoon . . . and found the pay phone directory that has your fingerprints on it. One of those prints, the right-hand index finger, is directly beneath Mr. Griffin's listing."

He seemed to hunch back in his chair, eyes staring out of a frozen face like a trapped animal. "It wasn't me," he said, the trembling in his hands now transferred to his voice. "It—it must have been Lamar."

"No," Dorfman said. "No. If Lamar had decided to kill Griffin he could have looked up the address at home or at any number of other places. You were the one who had no choice but to locate your victim, get a weapon, and commit murder, all in that single half-hour."

"You'll never prove it," the other gritted. "Never in a million years. Fine—so arrest me. I'll fight it all the way to the Supreme Court if I have to."

"You misunderstand, Mr. Holloway," Dorfman shook his head. "This isn't going to go to trial. I'm not filing any charges against you."

For a moment he just stared, a look of horror on his face. "What do you mean?" he whispered. "You can't do that—a man's been *murdered*, damn it. You can't just—you *can't*."

"Yes, I can," Dorfman said. "And I'm going to. Sometime next week the jury will deliver a verdict in *People v. Battistello*, and you'll be back in the courtroom to see that. And after that . . ."

"Oh, God," he whispered. "Oh, God, no. Please. I demand a trial," he said, his voice surging abruptly toward hysteria. "You hear me? I'm a citizen—I have a *right* to a trial."

"You're not a citizen any more," Compton said, his voice deliberately hard. "You're legally dead."

The air went out of him as if he'd been kicked in the stomach. "Oh, God," he whispered.

For a long minute the only sound in the room was the muted tapping of keys as the recorder caught up with the conversation. Then, steeling herself, Blanchard reached across the table and took the witness' hand. It was icy cold, and trembling. "It's all over, Michael," she told him gently. "Won't you please tell me why you killed him?"

He turned his face to her, his eyes vacant. "He was a thief," he said dully. "He stole other people's money. He deserved to die."

She shook her head. "He deserved punishment, but not death." She hesitated; but looking at him now, it was suddenly, achingly clear. "You did it for yourself, didn't you?" she said. "You killed a man, and deliberately dragged Walker into it, hoping the case would be snarled up in court for years.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"So that you wouldn't have to leave Soulminder."

He licked his lips, first the upper and then the lower, and suddenly his face twisted in anguish. "I don't want to die," he sobbed. "Please. *I don't want to die.*"

The knock came on her door a third time, and Blanchard reluctantly looked up from her work. Katovsky, almost certainly, here to respond to her letter of resignation. "Come in," she called.

She was wrong. "Dr. Blanchard," Sommer nodded, shifting the folder he was holding into his other hand and closing the door behind him. "I wonder if I might have a minute of your time?"

"Of course, sir," she said, indicating the guest chair. "I was just closing out a couple of my files."

Sommer sat down, laying his folder down on the edge of her desk in front of him. "I thought you'd like to know that the Holloway case is all over. The jury came back just after noon with a guilty verdict on Battistello. About an hour ago they brought Holloway back here and gave him final release."

Final release. From Walker Lamar's body, and from the Soulminder trap that had been his only existence for six months. Now, indeed, he was dead. "Did he ask why I wasn't there?"

"Yes," Sommer said. "I made an appropriate excuse, though I don't think he really believed me."

Blanchard felt her stomach knot up; with revulsion or guilt, she couldn't tell which. "I was going to go," she told Sommer. "But I couldn't face him. I just . . . couldn't."

"I understand. I almost couldn't face him myself." Sommer shook his head slowly, his eyes distant. "It's strange, you know. I spent over a month in a Soulminder trap ten years ago, and came away with a sense of utter peace about whatever it is that lies in store for us after death. And it wasn't just me—I've talked to dozens of others since then, all of whom had similar experiences.

"And then along comes someone like Michael Holloway."

Behind his cheeks, Sommer's jaw tightened. "He was terrified of death. Really, sincerely, terrified of it. So much so that he actually killed a man to try and postpone it." He focused on her, his gaze discomfiting in its intensity. "Why would anyone do a thing like that?"

"I don't know," she admitted. "Maybe he saw something different there than you did, or maybe he was more in love with this world than you are. Or maybe there was something he'd done in life that he regretted. Something he'd done, or something he'd failed to do."

Sommer's gaze seemed to soften a little. Or perhaps the intensity was merely turned inward. "I've done many things I've regretted, too," he murmured. "None of them seemed to matter when I was in Soulminder."

"Maybe you knew somehow that you were going to be coming out again," Blanchard suggested quietly. "That you still had a chance to try and make up for all of it."

Sommer sighed. "It's funny, you know. For ten years now I've been trying to convince Jessica that death isn't something to be feared. You know Jessica?"

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Dr. Jessica Sands, co-creator of Soulminder . . . and, inside rumor had it, the true driving force behind everything the corporation did. "I've heard of her, of course," Blanchard told him. "I've never met her personally."

"For ten years I've been trying to calm her down on that fear," Sommer said. "And I thought I'd made some progress. Now—" He shook his head. "It's all come to a head again. The funding proposals she faxed from Washington this morning showed a 15 percent increase for the various life-extension studies we've been supporting."

Blanchard shrugged uncomfortably. "There's nothing wrong with looking for ways to let people live longer and more fulfilling lives."

"No," Sommer nodded heavily. "Not with the idea itself. Only with the motivation behind it." He focused on her again. "But, then, you're a psychologist. You know all about motivation, don't you?"

She took a deep breath. "I've resigned as Pro-Witness liaison," she said. "I presume Mr. Katovsky's told you that."

Sommer nodded. "That's the main reason I'm here, in fact."

"If you're here to try and talk me out of it—"

"I'm not. I'm here to offer you a new job." Picking up the folder, he swiveled it around and put it down in front of her. "Take a look, if you would."

She shook her head. "I'm sorry, but I really don't want to work for Soulminder any more."

"If it's because we all but accused you of murder—"

"No, that's not it," she assured him. "From your point of view I suppose it was the most reasonable scenario. It's just . . . I don't know. I guess the Pro-Witness program has soured me on what Soulminder's doing these days."

"In that case," he said quietly, "you'll definitely want to look in that folder." Reaching over, he opened it and then sat back.

She stared at him for a moment before dropping her eyes to the desk. The top page, written on the Capitol Hill stationary of a New York senator, was a summary of a bill currently working its way through committee.

She looked up at Sommer again, stomach knotting within her. "This is crazy," she breathed, jabbing a finger on the paper. "You can't make it legal for people to will their bodies to someone else. Think of the pressure from family members, from society—my God; the whole public perception of suicide prevention and counselling would be turned 180 degrees over."

"There's more." Sommer nodded toward the folder. "A proposal that would make it legal for people to loan their bodies to the handicapped for a couple of hours at a time, for example. Another one would go even further—letting an infertile woman actually deliver the baby carried by the surrogate mother she'd hired."

Blanchard's throat felt tight. "So much for justice," she said bitterly. "You *did* say the Pro-Witness program was about justice, didn't you, Dr. Sommer?"

"Yes, I did. I take it that you disapprove of these ideas?"

She closed the folder, wishing vaguely there was some way to slam it.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"If you have to ask, you obviously weren't paying attention to me the other day."

"Do you disapprove enough to come to Washington and help me fight them?"

She stared at him, the blistering retort she'd prepared dying halfway up her throat. "I—to *fight* them?"

He was watching her closely, that discomfiting intensity back in his eyes. "This may come as a surprise," he told her, "but I have no interest in making money for money's sake. My vision for Soulminder is as a medical tool, something that can help save lives that would otherwise be lost. I had some strong misgivings about the Professional Witness program when it was first proposed, but Jessica was very keen on the idea and kept pushing it. I couldn't find enough solid objections, or couldn't find the right words for the ones I had. And in the end, I gave in. But even then I knew I'd have to draw the line somewhere, or I'd eventually wind up watching Soulminder become a sort of recreational body-switching toy for the idle rich.

"Here—" he touched the folder—"is where that line gets drawn."

She looked down at it. "It won't be easy," she said. "You can make a strong case for every one of these proposals."

"I realize that," Sommer agreed. "That's why I need your help. You're a psychologist—you have the training, and the right scientific words, to help convince Congress that this isn't what Soulminder should be about."

He stood up. "Think about it," he said, leaving the folder on the desk in front of her as he stepped back to the door. "I'll be here for another day or two, if you want to discuss it further." He paused, his hand on the doorknob. "Just remember that the longer we hesitate, the more ingrained the politicians' mind-set will be." With another nod, he left.

For a long time she just sat there, staring down at the cover of the folder. To deal with the renting of bodies again—not on a quiet, personal level this time, but on an overt, confrontative one. Fighting against people who wanted this and to hell with the ethics, or the overtones of slavery, or the consequences. People who would always remind her of the lengths Michael Holloway had gone to to try and stay alive. . . .

Or maybe, her earlier words seemed to echo through her mind, *there was something he'd done in life that he regretted. Something he'd done, or something he'd failed to do*. . . .

Reluctantly, she opened the folder again. And began to read. ■

EDITOR'S NOTE: *This story is part of the author's "Soulminder" series, the first of which appeared in our January 1989 issue.*

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the reference library

By Tom Easton

Fellow Traveler: Sputnik Mira, William Barton and Michael Capobianco, Bantam, $?, ? pp.

Ring of Charon, Roger MacBride Allen, TOR, $4.95, 500 pp.

Achilles' Choice, Larry Niven and Steven Barnes, TOR, $15.95, 216 pp.

The Exile Kiss, George Alec Effinger, Foundation Doubleday, $21.95 hb, $10.95 pb, 259 pp.

D'Shai, Joel Rosenberg, Ace, $4.95, 327 pp.

Night of the Cooters, Howard Waldrop, Ursus Imprints (5539 Jackson, Kansas City, MO 64130), $25, 250 + xii pp.

Short Circuits, Bruce Boston, **Bad News from the Stars,** Steve Sneyd, Ocean View Books (Box 4148, Mountain View, CA 94040), $9.95 ($20 for limited hardbound edition), 98 pp.

All the Visions, Rudy Rucker, **Space Baltic,** Anselm Hollo, Ocean View, $9.95 ($50 for limited hardbound edition), 224 pp.

Expedition, Wayne Douglas Barlowe, Workman, $29.95 (hard), $18.95 (paper), 192 pp.

In the Stream of Stars, William K. Hartmann, Andrei Sokolov, Ron Miller, and Vitaly Myagkov, eds., Workman, $29.95 (hard), $19.95 (paper), 183 pp.

Science-Fiction: The Early Years, Everett F. Bleiler, Kent State University Press, $75, 998 + xxvi pp.

Pink Elephants and Hairy Toads, Mike Resnick, Wildside Press (37 Fillmore Street, Newark, NJ 07105), $25 (hb), 95 pp.

Fafhrd & Me, Fritz Leiber, Wildside Press (37 Fillmore Street, Newark, NJ 07105), $9.95 (pb), 96 pp.

There is a certain hazard in writing novels that are too closely tied to current events, for what happens in the few months after finishing the writing and before the book reaches the stores can make the book seem quite dated. Give history a few more months or years, and the problem can only grow worse.

I'm writing these words in February 1991. There is war in the Persian Gulf. Mikhail Gorbachev still presides over

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

the U.S.S.R.'s internal squabbles, but that nation's economy is in critical condition and the Union is threatening to crumble into a horde of impotent republics; it is hardly an act of prophecy to say that he may no longer be in charge by the time you read these words.

That being so, you can imagine how William Barton and Michael Capobianco must feel. I've just finished reading the manuscript of their **Fellow Traveler: Sputnik Mira,** due from Bantam in August. Among other things, the novel posits that Gorby will still be there in 2002 and that the Soviet economy is and will remain strong enough to sustain a manned space program some people think may give humanity a space-based civilization long before the U.S. program, for all its technical excellence, can get off its thumbs. The Soviet hardware may be crude by comparison, say these authors, but it works and the Soviets don't let disasters stop them cold. They have *vision,* a sense of long-term destiny that the U.S. has lost in its pursuit of a risk-free bottom line.[1]

Barton and Capobianco's story begins in 2001, when a Soviet crew is about to land on the Moon. Astronomers notice that an asteroid, Sinuhe, is going to come within reach of the lunar expedition's craft. Since the lunar lander may not be all that reliable, the suggestion that the expedition go instead to Sinuhe and use small nuclear bombs to kick it into Earth orbit for use as a source of raw materials for space industry finds favor. The U.S., despite a decade of peace and disarmament, reacts with conservative paranoia. The Soviet mission succeeds. The U.S. sends big bombs in an attempt to shatter the asteroid and prevent disaster for the world—but especially for the U.S. Sinuhe breaks into two pieces, both of them headed not for orbit—the Soviets *succeeded,* remember—but for impact. The Soviet submarine fleet puts to sea to be in position to claim revenge.

Is there any way out? The Soviet crew is still up there, and they have one small bomb left. Can they help? Are they doomed? Is the world doomed?

Does the reader even care? I ask this question because I myself found the book's first half tedious, flawed by attempts to make the numerous characters memorable by giving them big noses and psychiatric quirks,[2] full of digressions into the characters' pasts that seemed to have little to do with the story, though they were often intriguing. Yet I persevered, partly because I had said that the authors' first novel, *Iris,* showed promise and I wanted to see if that promise was fulfilled.

To put it briefly, despite the flaws, it was. I think the book would benefit by shortening, but Barton and Capobianco spare no venom in their criticisms of our nation's characteristic weaknesses. And *Fellow Traveler*'s ending has a breathless grandeur that will thrill to their toes all SF readers whose loyalties are to the species rather than to any specific nation.

SF stories periodically suggest that as soon as we reach some technological plateau—radio, say, or TV or deliberate attempts to reach out and touch someone with some sort of message—the aliens Out There will Take Notice and

[1]What other Earthly cultures might also display such a sense of destiny—even if they do not yet have the technology—and thereby inherit the future we forfeited when we killed the Apollo program? Consider the Chinese. Better yet, consider Islam and the Israelis, and imagine the Middle East played out on a cosmic scale. There are some great stories in *that* combo!

[2]Of course such things are real. It still felt like overkill.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

Do Something, said Something ranging from trashing the joint to inviting us to join them at the Galactic Milk Bar for a snort or two of stardust. The latest of the type is Roger MacBride Allen's **Ring of Charon.**

The tale begins at a research establishment on Pluto. Its mission is the search for a way to harness gravity, using a huge accelerator that girdles Charon (Pluto's moon). Sadly, the search has not panned out and the lab must now be closed down. The head of the lab, Dr. Simon Raphael, is a sour, embittered, cantankerous SOB with little love for boy geniuses such as Larry Chao, who one night takes over the Ring to try an unauthorized experiment. He thinks it should be possible to concentrate Pluto's gravity into a field much more intense and stable than anyone has so far managed. He succeeds. Raphael turns jealous, announces the shutdown, and forbids Larry to pursue his nonsense any further. Others, however, are intrigued, and soon Larry has a chance to fire a graser (gravity laser) toward detectors in the inner Solar System.

Not surprisingly, scientists elsewhere grow quickly excited. *Very* surprisingly, so does an "Observer" concealed within the Moon, and when the graser touches this alien being, Earth disappears. You can imagine what follows: Larry Chao's guilt, utter consternation, widespread panic, and then growing resolve as the Earth is replaced by a black hole from which emerge what seem to be alien spaceships, powered by gravity. At the same time, asteroids throughout the System begin to move toward the moons and planets, revealing their true nature as camouflaged, dormant alien devices. Meanwhile, Earth is undergoing its own traumas as it emerges from the wormhole through which the aliens thrust it to find a Dyson Sphere surrounded by stars festooned with life-bearing worlds.

Can Chao and his colleagues improve their grasp of gravitics technology in time to keep the aliens or Charonians from destroying the Solar System? Can Marcia MacDougal decipher the image-based communications of the Charonians, which seem to be half machine and half animal? Can a way be found to communicate with Earth? Or to get Earth back?

Now consider that this is just the "First Book of the Hunted Earth." It is not hard to predict that even if the System humans find a way to talk to Earth, even if they defeat the Charonians, even if they become overnight gravitics sensations (in the grand tradition of superscience SF), they will *not* get Earth back. Indeed, they will lose contact without having any idea of where in the galaxy—or galaxies!—Earth is. Future books will give us the quest, further battles with the Charonians, and perhaps a little more information on whatever it is that can terrify an organism as large as a solar system.

Allen puts his own spin on the old idea of a lost Earth. It wasn't forgotten in the mists of legend. It wasn't destroyed. It was stolen! And if anyone sees fit to base a TV series on this book and its sequels, the result could be immensely more convincing than the late unlamented "Battlestar Galactica."

Grand stuff in a grand tradition, and it comes in a generous package. An excellent buy.

Legend tells us that the gods gave Greek hero Achilles a choice between glory and longevity. He chose glory, of course, and what hero wouldn't?[3] In-

[3]We could even say that it is the headlong disregard for personal welfare that defines the hero. It is therefore just as well that there is

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

deed, what hero of popular literature —including science fiction— hasn't? Yet few have done so as explicitly as Achilles, a lack Larry Niven and Steven Barnes do their best to remedy in **Achilles' Choice.**

In the future, Niven and Barnes tell us, the world will be at peace, ruled by an elite Council. Membership on the Council comes only to those few who win an Olympics that tests for athletic, academic, and artistic excellence. Yet only those who have their brains "Boosted" to permit them to tap directly the data and other resources of the worldwide computer net have any chance to win. The unBoosted simply cannot compete. Unfortunately, the Boost, though it offers the chance for glory, also promises death. Those who do not take gold at the Olympics and thereby earn Linkage (a glorified Boost that among other things prevents the brain deterioration hastened by Boost) die within eight years. And only a very few of the thousands of hopefuls who go to the Olympics every four years will take the gold.

One of these hopefuls is Jillian Schomer. Brilliant, but perhaps not brilliant enough, she wants to win without the Boost. She is delving into the databases, trying to puzzle out clues she has obtained that suggest war between Council members, war that may have been responsible for her mother's "accidental" death years before, a fly of conflict in the ointment of utopia. But someone on the Council moves against her, blocking her access and thereby making her chance of Olympic success even less likely. Almost too late, she accepts that her only shot at the dream of glory lies with the Boost. She must make Achilles' choice.

I don't think the tale's admitted charms are quite enough to justify buying a relatively short novel at hardcover prices. There are too many flaws for that. The visions of society and hacker heaven seemed too simplistic by far. The technology seems to have been thought out only far enough to justify the plot. And the proofs I saw contained inconsistencies (which *should* be fixed by the time you see the finished book). Yet the charms *are* there, and they amply justify the paperback you should see in due time.

Much more satisfying is George Alec Effinger's **The Exile Kiss.** Once again, Marid Audran, heir in training to great-grandpa Friedlander Bey, lord of crime and data, must survive the intrigues of the Budayeen, the low-life district of a future Arabian city. Drugs are easily available, strippers are rated on their "body-mods," and personalities, databases, and slices of others' lives can be plugged into one's brain rather like Nintendo cartridges. Marid, once just another bit of flotsam on the streets, has been raised to power and wealth and some involvement in his mentor's intrigues. Now, however, their chief opponent, Abu Adil, has arranged to have both Friedlander Bey and Marid accused of murder. A rigged religious court sends them into exile, to no other place than the Rub' al-Khali, the Empty Quarter of the Saudi Arabian desert. Fortunately, they survive long enough to be rescued by a Bedouin group. It is then only a matter of time and patience before they return to the Budayeen and achieve a measure of revenge.

If I call *Kiss* "more satisfying," that is only because I am comparing it to *Achilles' Choice*. If I compare it to the

some sort of personal payoff waiting for them. Certainly, those who charge off in pursuit of glory (not to mention women and loot) don't tend to live very long.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

earlier volumes in Effinger's series (*When Gravity Fails* and *A Fire in the Sun*), I have to be less sanguine. The milieu, the ambience, is no longer so novel. Marid and his associates have not changed much, if at all. There is a distinct "more of the same" flavor to the book.

Perhaps because he was aware of this problem, Effinger takes fully half the book to get his heroes back to town. That is, he shifts the setting to the Rub' al-Khali, and there he has been remarkably fortunate. Few writers are able to set a story so near the source of current headlines.[4] Those that do can expect to enjoy increased sales. Happily, those who buy *Exile Kiss* for its connection to the Gulf War will get not only a bit of a geography lesson and some insight into the Arab mind, but also a reasonably good tale. They may even be enticed into reading the earlier and—I think—better novels.

For those who like to keep track of the in-jokes, yes, Effinger once more refers to a fictional detective. This time, however, it is not to one I am familiar with. Perhaps author Lutfy Gad is as fictional as his hero, al-Qaddani.

With **D'Shai,** Joel Rosenberg begins a new series for the fantasy market. Its setting, the land of D'Shai, seems a fairly nondescript blend of feudal, Arab, and oriental except in one thing: kazuh. Kazuh is something like calling or destiny or the muses, a sense of cosmic rightness and inspiration which, when it is on you, means that every move you make is not just right, not just superlative, but touched by divine fire. D'Shai knows some fifty different kazuhs; one each for warriors, armorers, runners, cooks, acrobats, musicians, painters, even peasants, and each citizen's role in the culture is defined by his or her kazuh (or lack thereof; not all are so blessed). Yet kazuh runs in families, and it is quite possible for inherited role and kazuh to conflict. There is therefore a way for peasants who think they have a warrior's kazuh to "try out" for the higher position. Yet there seems to be no way for folk of other kazuh to find their proper niches.

This strikes me as an unlikely oversight. Any culture so dependent on kazuh *must* have some sort of evaluation system, a mechanism for more than peasant-to-warrior transitions. Yet that mechanism isn't there. The reason is surely that in that lack lies Rosenberg's story: Kami Khuzud was born an acrobat but is not all that good at it. He doesn't have the kazuh. Indeed, if he has any kazuh at all, he doesn't know what it is for. Now his troupe arrives in Den-Oroshtai, he goes to call on his own true love and finds that the local lord's armorer, Refle, has his own eyes on her. Refle threatens. A masked thug breaks Kami's bones. The high-wire snaps; and Kami's sister is dead.

Kami is sure that Refle is the dastardly villain, and of course he is. But Kami must prove it and in the process discover that the knack he has always had for solving puzzles is a sign of something greater, a new kind of kazuh.

D'Shai is not complex or rich or showy in any way. Yet it is a comfortable read, and with it Rosenberg promises something that may prove quite interesting, for he seems to be designing Kami as the Sherlock Holmes of fantasy.

The subtitle tells it all: **Night of the Cooters: More Neat Stories** by How-

[4]Current as I write this review in February. Perhaps still current in May, when the book is scheduled to be published. Worst of all, *still* current when you read this review.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ard Waldrop. If you want a taste of the sort of consummate weirdness of which Waldrop is more than capable, consider "Fin de Cycle," in which the French army rides high-wheeled bicycles ("ordinaries") to battle, Picasso, Proust, Rousseau, and Mélis make a film to save Dreyfus, and a duel *on bicycles* is fought on the Eiffel Tower. Or consider "Wild, Wild Horses," in which Waldrop gets the last centaur home while giving a nod to *Winnie Ille Pu*, and then "The Passing of the Western," in which he tap dances merrily on the corpse of the cowboy flick, and then . . . Enough. Go forth, and enjoy.

The old Ace Doubles format must be the Dracula of the publishing world. At least, it keeps coming back from the dead as with the TOR novella combos. Now Ocean View Books is pairing writers from the SF and mainstream communities and has sent me a pair of samples. The first is **Short Circuits** by award-winning SF poet Bruce Boston, flip-sided with Steve Sneyd's **Bad News from the Stars.** The Boston is 22 "short fictions," prose poems and images and scenes, often quite pithily intriguing. Sneyd offers 17 poems, full of cross-references to the classics, even of the ancients, and quite as firmly based in SF as Boston's work. It's hard to tell which of the two is intended as the mainstream representative here.

The second Ocean View Double is Rudy Rucker's **All the Visions** flipped by Anselm Hollo's **Space Baltic.** Hollo is the mainstreamer; his poetry tends to the cleverly cute, as in the opening pair of poems, "In the Long View of Human History Man's Reliance on Fossil Fuels Can Be But a Short Episode" and "The Moving Houses Are Very Moving as They Move Slowly into the Sea," of which the one is the other's text. Rucker's offering is a memoir originally typed a la Kerouac on a continuous roll of paper; part of it appeared in *Journal Wired* as "Live Sex and Drugs in New York City." The portrait is of a misfit growing up on the fringes of the sixties and feeling rather desperately out of it. The overall flavor is well captured by the Robert Williams (of *Zap Comics*) cover illustration showing a blindfolded rabbit sniffing a carrot in a bear trap while a magician aims a hex, and a naked lady holding two dice and wearing a strategically placed ace of spades looks on; an inset shows four rabbit-foot key chains. I interpret this by pronouncing the author's name with a stereotyped Japanese accent and claiming to see an atrocious pun.[5]

The past few weeks have brought me a pair of noteworthy art books and worthy coffee-table companions from Workman Publishing. The first is Wayne Barlowe's **Expedition: Being an Account in Words and Artwork of the 2358 A.D. Voyage to Darwin IV.** If you remember his first book, *Barlowe's Guide to Extraterrestrials* ("176,000 copies in print!" claims the puff sheet), you can guess the sort of thing he's up to: finely detailed imaginations of strange aliens that might actually work. But that is really the least of it. This time Barlowe has begun with a scenario: Earth has been wrecked. Fortunately, the alien Yma arrived to help us out before it was too late. Then, following the discovery by unmanned probe of the Darwin system and its fourth planet, the Yma mount a joint Yma-human expedition to study the strange life-forms there. Technology

[5]OK, I'll talk. Rudy Rucker—Ludy Lucker—Lady Luck.

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

will permit the observers to leave no mark upon the world.

Barlowe is on the expedition as an artist, his assignment to record the aliens as only the artist's subjective eye can manage. Yet he also notes some of the objective facts to orient us: The names on a planetary map commemorate his wife (Lacus McCarthy), Earth's explorers (Mons Marco Polo), and others (Laci Herbert and Bisson, Fossae Temujin and Philby). Darwin IV's eyeless wildlife uses sonar, runs on one leg, two legs, three legs, four, and even floats aloft. There is an Amoebic Sea and enormous Emperor Sea Striders, Unths and Daggerwrists, Grove-backs and Tundra-plows, even Eosapiens.

What do all these alien creatures look like? Try to imagine the fever dreams of the mad offspring of a biologist and a 1957 Ford or Chevy or Buick, all fins and grills and strange excrescencies. Yet it all makes sense, and the result of all Barlowe's labors is a feast for the mind and eye. It is marred only by a few inconsistencies in the text and between text and picture.

In claiming to journey as official artist on a scientific expedition, Barlowe was planting his feet firmly in an honored tradition. Painters and photographers accompanied scientific expeditions that explored the North American wilderness during the nineteenth century. Painters have also flown into space on behalf of both the U.S.S.R. and the U.S.A. and brought back their interpretations of what they saw and felt. It is thus no great surprise and a considerable pleasure to see **In the Stream of Stars: The Soviet/American Space Art Book,** edited by William K. Hartmann, Andrei Sokolov, Ron Miller, and Vitaly Myagkov. Hartmann is a planetary scientist and astronomical painter and writer. Miller is an astronomical and SF painter. Sokolov is known as "the dean of Soviet space art." Myagkov is the secretary of the board for the Soviet Union of Artists, an artist in his own right, and an active facilitator of Soviet-Western artistic collaboration.

Besides loads of glossy reproductions of artworks, the book contains a historical introduction by Ray Bradbury ("We Are the Carpenters of an Invisible Cathedral"), essays on the origins of this international project, "The History of Space Art" (in step with SF), "Space Art in the U.S.S.R.," and the NASA art program—which gives artists a very Barlowesque role and displays the results in a gallery at the Kennedy Space Center, as well as elsewhere. Cosmonaut Leonov emcees a display of his own and others' paintings. Alan Bean, Apollo 12 astronaut, offers some of his works and discusses the impact of the strange lunar environment on an artist's sensibilities. And there's more, even a Barlowe, enough in all to delight any fan of science fiction or dreamer of space.

Serious scholars of SF might kill for it, but I don't expect many other individuals will want to own a copy. On the other hand, a great many students and part-time scholars will surely want to consult it. Librarians take note.

What am I talking about? Everett F. Bleiler's **Science-Fiction: The Early Years.** It's a thousand-page index to pre-1930 fiction books and stories, background books, motifs and themes, magazines, and authors. There's even an index of date of publication, not to mention an introduction that defines terms and methods and presents a brief history of SF.

As it happens, I've just returned home

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

from Boskone 28, where Mike Resnick was the guest of honor, and I have just enough room at the end of this column to say a few words about a new small press and its first two offerings. The press is John Betancourt's Wildside Press. The offering I liked better is **Pink Elephants and Hairy Toads,** in which a Martha Soukup introduction and a Pat Cadigan afterword sandwich three tales by Mike Resnick. "The Inn of the Hairy Toad" is quite a funny send-up of Conanistic barbarian sword and sorcery. "His Award- Winning Science Fiction Story," from that excellent fanzine *Lan's Lantern,* is quite indescribable, except by saying that even though it never really gets off the ground, it thoroughly ridicules both space opera and Resnick; its closest kin is *The Red-Tape War,* that Resnick-Chalker-Effinger round-robin I reviewed last May. "Post Time in Pink," new to this book, brings back John Justin Mallory (hero of *Stalking the Unicorn*) to deal with nefarious doings at the racetrack—where the mechanical rabbit that leads the dogs round and round is replaced by a mechanical mouse that chases *elephants* round and round.

It is one of Mike's many gifts that when he wants you to laugh, you laugh.

The other Wildside offering actually came out late in 1990. It's **Fafhrd & Me,** a collection of essays by Fritz Leiber. The introduction is by Darrell Schweitzer. The eleven essays are as old as 1947 and as young as 1983. They cover "The Anima Archetype in Science Fantasy," "Robert E. Howard's Style," "My Correspondence with Lovecraft," "My Life and Writings," and more.

I hardly need to tell you more than this. These essays are the recorded thoughts of a writer so great that he would stand out even were he not a founding father of modern fantasy. Listen to him, and reflect that it is a modern tragedy that no younger writer seems prepared to accept the mantle of greatness that Leiber must lay down before many more years are gone. ■

●Man will not fly for fifty years.

Wilbur Wright, 1901

●Airplanes will be used in sport, but they are not to be thought of as commercial carriers.

Octave Chanute, 1904

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

brass tacks

Dear Dr. Schmidt:

In the March 1991 Brass Tacks, there was a comment that libraries do not seem to get much SF. As a librarian who is also an avid reader of SF, I would like to pass on some comments about this.

First of all, it is true that SF is not one of the larger sections of most libraries and here are some of the reasons:

1) SF is the least read of any type of fiction in the library. At my branch, the typical SF new hardbound gets 5 readings in 18 months as compared to 17 for the average mystery or 35 for a non-SF best-seller. All of this is faithfully recorded by our circulation computer and budgetary decisions are based in part on this. *2)* Libraries tend to buy hardbound books as they last longer, but the bulk of SF is still paperback originals. Non-SF reading librarians buy SF best-sellers both in the hardbound and paper and buy few paperback originals, as they haven't heard of the authors. *3)* SF readers are generally not sophisticated library users. That is, they don't know how to use the system. Most libraries confronted with a patron with a list of authors and titles will have some form that can be filled out that will ultimately result in their getting a copy of the book to read. My library system will automatically purchase any title under $50 that is in print just to fill one reserve. This means readers of *Analog* would probably get 90% of the books they see advertised or reviewed there if they went to their library and filled out requests for any of them that weren't on the shelf. As long as SF readers walk in, look on the shelf, see there isn't much, and then leave without making any specific requests, the situation will remain the same. Libraries are funded by taxes, and librarians respond to the taxpayer who asks for something or to

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

frequent use, which indicates a demand for a certain type of book. When something is seldom used and nothing is said to indicate dissatisfaction with what is available, then the natural conclusion is that everyone is happy and satisfied. If you are not satisfied with what you see at your library, be sure that the finger of blame is pointed at yourself as well as the staff there, unless you have done *all* of these things!

1) Filled our reserves for books you know are newly published by authors you'd like to read.

2) Actually checked out any books you filled out the reserve for, even if you'd read it from some other source. (Did you know that *any* book, SF or other, will be in the bookstore *before* your library has it on the shelf? Bookstores have far less processing to do and get their copies from the publisher, libraries get them from jobbers who do some of the processing.)

3) Checked out SF on a regular basis.

4) Filled out interlibrary loan forms for any SF book the library failed to provide on its own.

5) Donated money through the library honor with book program in someone's name, specifying that it be spent on SF titles.

People that follow through on these steps will notice a marked improvement in the quality of the SF and some improvement in the quantity, which may inspire more usage on the part of others, which will result in still more attention to SF. If this is too much trouble for you, and you'd rather buy your SF, then don't complain about how expensive that is and how little the library cares about your reading pleasure.

ANITA L. COLE

641 NE 164 Street
NMB, FL 33162

Dear David Allen:

Yes, David, there is someone out there—and another "old goat" like yourself, too.

Because your letter (December 1990) must have been written at least six months ago, and because I have had a birthday since, and am now 78, I may or may not be older than you, but it's close. I am sure there are older readers.

In any case I cannot match your loyalty. While I thought I had been reading *Astounding/Analog* since 1926, I must have started on *Amazing Stories*, and then during college, the war, and the early years of marriage I didn't read much Sci-Fi. So you win the loyalty trophy, which over here, along with seventy cents, will buy you a cup of tea.

I, too, have traveled in space and time with *Astounding/Analog*, have had my imagination stretched and have had my thinking improved. It's been fun.

I have some affinity for "Jolly Old England" since my maternal grandmother, at the age of three, came from Sheffield to the States with her family in 1863. My other grandparents' ancestors came from England in the 1630s, some to escape "Debtors Prison" I'm sure.

May you have many more years, in good health, of Sci-Fi reading.

ART WARNER

Woodbridge, CT

Dear Dr. Schmidt:

I have been reading *Analog* since I was about 10, which means I've been a regular reader for nearly 30 years. Since my father (from whom I inherited the *Analog* Habit) probably saved every issue he ever bought, I imagine I've read most of the issues published since about 1945, way back when it was still *Astounding*. Besides enjoying nearly everything I've read, it's been interest-

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

ing to watch the magazine develop as a mirror and prognosticator of social and scientific/technological developments over the years. Overall, *Analog* has moved sociologically toward a universe-view that embraces gender, race, and even species equality among sentients.

With that in mind, you shouldn't be surprised to learn that reading Daniel Hatch's "Den of Foxes" in the December issue was a strange experience for me. It certainly had a good story line and was fairly well written, but it felt really weird to read a story where the women were treated as being somehow totally different from the men. I enjoy "buddy" stories, where the main characters are both the same sex and the other gender is peripheral to the story. "Foxes" isn't a "buddy" story, though. It has women who are important to the story, all right—they are all incomprehensible but indispensable housewives. I hadn't seen an attitude like that in a science fiction story in so long that it completely dumbfounded me.

Everyone is entitled to his or her own opinion on everything. However, *Analog* has a tradition of trying to make sure that what they print is scientifically and logically sound. Personally, I think you missed a major flaw in "Den of Foxes." It seems to defy logic that there would be such a division between the men and women on a frontier planet. Would half the population on a newly settled planet really sit inside the house while their life partners were frantically trying to keep the greenhouse from falling into the creek or the chicks from freezing? It seems to me that a newly opened and sparsely settled planet could not afford the luxury of allowing half the population to devote most of their time to housekeeping and child rearing, worthwhile though those endeavors are. Further, I don't personally know very many men who would put up with a wife who wouldn't be out there in the mud holding up the other end of the log unless she was sick in bed. My own husband certainly wouldn't. But then, I wouldn't put up with him pulling a trick like that, either.

Although a lot of people think it's immoral to emphasize mental differences these days, that part of the story didn't seem too terribly implausible if you could swallow the homemaker scenario. I have friends who are mainly homemakers to whom I have more difficulty relating in some ways than my professional associates of either gender. I don't think it's so much that there's a difference in brain processes than that there's a difference in what the major concerns of their day-to-day lives are.

Overall, I'm not sure what my reaction to "Foxes" is. Perhaps puzzlement. Why did you print it with that logic flaw intact? Didn't you see it as a logic flaw? Is this a time-warp thing? What is Mrs. Hatch like (if there is a Mrs.)? Frankly, such a story is somewhat disturbing to someone like me who is old enough to remember when many men commonly and openly thought women were so different from men that most women couldn't possibly contribute substantially to fields other than teaching, nursing, office support, or homemaking. That attitude just doesn't mesh with my personal reality as an architect, a wife, and a mother of two reasonably well adjusted, well behaved, and intelligent boys. I'm certainly not going to berate you for publishing "Foxes," nor threaten to cancel my subscription. I even enjoyed the story when I managed to swallow hard enough that I didn't choke on the women. However, I really would like

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

to know what was behind both the creation of the women in the story and your decision to publish it without modifying it. Can you enlighten me?

KATHLEEN P. SNODGRASS
Grangeville, ID

The author replies. . . .

Dear Ms. Snodgrass:

I am sorry that the characterization of the women in the story was disconcerting to you and that it otherwise interfered in your enjoyment of the story. But in my defense, I would like to point out my reasoning for portraying the women as I did.

First of all, if you look closely at the story, you'll find that Jackie Palmer is knee-deep in the mud, helping her husband save the greenhouse when it is necessary. Bear in mind that she is pregnant, please, and do not expect her to do much in the way of physical labor, but she was there in the truck and helped Lin remove the power plant when he asked.

That aside, however, I will not deny that the relationships between Lin and Jackie Palmer, and Marty and Lois Meyers are not what you or I would consider ideal. But then, I am not a strong believer in ideal futures.

Equality between men and women in all relationships is a goal to be desired, but it is difficult to achieve—as I'm sure you know. It is the result of hard work and constant attention. I believe that those women who achieve such equality are in some ways extraordinary—at least in our current culture. But the Palmers and Meyerses are not extraordinary. Quite to the contrary, they are meant to be very ordinary people. And it has been my experience that most ordinary people are imperfect and incomplete and unequal in their treatment of one another for a whole range of reasons.

The culture they inhabit is much the same—imperfect and incomplete. It is not one of their own creation or choosing. Like all cultures, it is one that they have inherited from their ancestors, us. And while the past 20 years have indeed revealed the need for more equality between men and women, that knowledge alone has not been sufficient to produce the equality that you and other middle-class professionals enjoy for all women everywhere. The inequality persists for a number of reasons, most of which are not easily changed. In the future, as in the present and the past, equality between men and women is likely to be a worthy goal that can only be achieved through hard work. All our technology is likely to do is provide us with new theaters in which to conduct that work—as the stories about Asgard attempt to show.

As for Jackie Palmer and Lois Meyers being "incomprehensible"—that is only the perception of their husbands. I happen to find them both entirely comprehensible.

Jackie has to put up with a husband who is stubborn and often narrow-minded. While he cannot understand her, I am sure she understands him completely. She is intelligent, and several times in the story shows that she has a better grasp of events than he does, although she is stuck waiting for Lin to catch up with her. I don't believe that this is the result of anything "mystical" about being a woman. But I believe that the victims of inequality have a much keener sense of their position than those who impose the inequality upon them. The injustice is at the center of their lives, while it is on the periphery of those who are unjust. This is true for slaves, servants, workers, and women. She doesn't spend her time keeping house in a tent—she is plugged into the

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

colony's computer network, reading, studying, planning and preparing. Who knows, she may some day become an architect.

Lois Meyers, on the other hand, *is* a housewife. She is also grasping, ambitious, status-hungry, dependent, and domineering. Marty puts a lot of energy into denial to avoid accepting this—until the end of the story—and as a result, he doesn't want to admit that he understands his wife. But we do.

And it's all right if you find her unsympathetic—she's one of the story's villains.

I hope you read the other stories about the colonization of *Asgard,* even if you find the female characters are not what you expect from *Analog*. I think some of the women in the stories are examples of what you and I would like to see in future generations. And, as in real life, some are not.

DANIEL HATCH

Dear Stan,

I just finished the story, "Den of Foxes," and have some comments, questions, and suggestions.

1) The colony loses 1 ship out of the total 20. Why are entire dens placed on a single ship? The story implies that each den is expert in some specialty—the loss of a complete den implies loss of a specialty. Would all of their specialized equipment be lost as well?

Don't-put-all-of-your-eggs-in-one-basket planning would split each den over 20 ships, along with 1/20th of the equipment belonging to that den. Each ship, then, could form a tiny colony single-handedly. The social pressures that require the dens be kept intact on board ship must be tremendous! I inferred that the journey was (subjectively) brief—launch, transmit/reassemble, orbit, and land. As it turns out, it's a piece of throw-away plot, with no significance to the rest of the story.

2) A brand-new colony doesn't have a network of weather and communication satellites? Or were they all on ship #20? The shuttle fleet seems to get quite a workout for observation duty—a (needless) waste of fuel. The meteorologist could just as well have worked with a satellite downlink. Supplies of electronics seem to be adequate—there were quite a few portable computers kicking around.

3) The lack of a satellite network is a plot gimmick that lets an AI computer survive a shuttle crash, while the meteorologist valiantly gasps out the solution to the world's weather prediction problems with his last breath. His death is another piece of throw-away plot. If his death and the AI's survival are required, they could have been trapped in a blizzard.

4) Being able to predict the weather gives the (hardy) colonials the backbone to resist the Kolberg's machinations? Huh? The Kolberg's give up at this point? Poor weather reports affected the planned building schedule that much?

5) No one ever heard of a spring thaw? The greenhouse seemed to be planted in the path of major runoff—wouldn't there be a gully from previous years?

6) This is a first-wave colony—I think that a first-wave colony would tend to be a bit cautious, and huddle together for the first few years until things like crops get established. It makes a trip to the doctor easier, too!

Townships I can accept—it spreads out the eggs. Each den sounds like it's large enough to independently survive. The homesteads sound quite spread out. Man started out huddling together in families and small clans; I think a more centralized organization would be more

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

"natural"—the Kolberg's centralized control would be preestablished!

Homesteads would be constructed as time and materials allowed (and as natural enemies of mankind were identified). Early colonies in this country started with a stockade fence with everyone living inside. Individual homesteads came later, after natives and wildlife fled the area.

7) If each den is so specialized, they'd want to be closer together so the different skills could work together. In a more mercenary vein, you can't sell your services to a non-existent market—you need a good location close to the customers!

In short, there are a lot of plot-holes that my suspension of disbelief couldn't fill. The story didn't seem to be up to your normally high standards.

PAUL E. MUSSELMAN

Broadway, NJ

The author replies. . . .

Dear Stan:

A colony of 100,000 huddling behind the walls of a stockade two kilometers in diameter whose only contact with the world outside is through computers and satellite networks? That's a pretty dismal picture of life on a new world, if you ask me, but that's the picture Mr. Musselman paints.

Overall, he seems to count on infallible planning, limitless budgets, and paranoid settlers. In detail, let me address his points. *1)* Yes, the social pressures are intense to transport dens as whole units. They consist of families and groups of families who have prepared for this effort for years. *2)* The question the meteorologist is trying to answer is where to put the weather satellites and where to direct their attention. And the Scouts have been maintaining ships in orbit for 85 years, partly to remind themselves that they are part of a spacefaring race (hydrogen and oxygen fuel for that purpose is plentiful on a planet full of ice). *3)* ???? *4)* Who said the Kolbergs give up? *5)* A spring thaw is not at all the same as a Chinook wind. *6)* A first-wave colony of 100,000 (a small slice of a high-tech society geared towards self-sustaining agriculture) would probably be organized along the same lines as a military landing. Maximum survivability would come by dispersing and going to ground—a defensive strategy as opposed to the Kolbergs's offensive strategy. In American colonies, stockades were used as a refuge when the Indians attacked and not as permanent homes. In fact, the pattern of colonization I've described on Asgard is quite similar in scale and dimension to that used to settle Ohio, Indiana, and Illinois. The 64-hectare farmstead is roughly equal to the 160-acre homestead allotted to American settlers. And *7)* the specialties include service workers, teachers, medical centers, transportation, administration, and a handful of light manufacturing and other unique groups. Aside from the highly technical dens, who belong in the urban centers, there are enough specialty dens to disperse with the farmers and put their services within easy reach.

DANIEL HATCH

Dear Dr. Schmidt:

I just read "Where Buffalo Roam," by John and Mary Gribbin (October 1990). (By the "miracle of modern magazine publishing," the issue with this story is dated three months into the future from today.) The discussion, on page 63, of the excavation of the Mill Creek, Iowa, Indians, brings up radiocarbon dating. I am very interested in the error "bars," the uncertainty in that technique, particularly since that is central to the second half of the Gribbins's

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

story: It would take an error of more than 200 years to match the date, 1348, cited on page 62. If that method of dating is "known," as the Gribbins claim, then "Where Buffalo Roam" is shaky. If that method is uncertain, then its conclusions are uncertain, too. Which is the problem?

TOM SATHRE

Littleton, CO

The authors reply. . . .

Dear Stan.

The reference on page 62 is to the problems, which we suggested were weather related, faced by the European population in the early fourteenth century—but note that earlier on the same page we mention that the weather pattern began to change much sooner, and had already brought difficulties in the thirteenth century. The reference on page 63 is to carbon dating of the Mill Creek site in the United States, and the discussion that follows concerns a decline in their culture in the twelfth century and later, culminating around 1400. As we should have spelled out more directly in the article, both events are regarded as specific *local* disruptions that were associated with a long-term, *general* decline of climate from about 900 A.D. until about the seventeenth century. On the specific question, carbon dating is a very reliable tool on this sort of timescale, and in any case there is no "error of more than 200 years" between the European problems of the thirteenth and fourteenth centuries and the Amerindian problems of the twelfth to fourteenth centuries. They overlap!

JOHN AND MARY GRIBBIN ■

●When it's a question of policy, the Court bristles with advisers; but once it is a question of action, no one can be found.

Jean de La Fontaine

●The keenest sorrow is to recognize ourselves as the sole cause of all our adversities.

Sophocles

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

a calendar of analog upcoming events

27-29 September
CON-CHORD 7 (SF filk convention) at Holiday Inn-LAX, Los Angeles, Calif. Guest of Honor—Michael Longcor (Moonwolf), TM—Juanita Coulson. Concerts, workshops, open singing. Registration—$20 until 10 July, $25 until 14 September, $30 at the door ($10 Friday, $15 Saturday, $8 Saturday evening, $10 Sunday); supporting—$8 at all times. Info: Con-Chord 7, 1810 14th St. #100, Santa Monica CA 90404. (213) 546-4935 [BBS 213-546-1861 (8,N,1)].

4-6 October
7th Annual Midwest Space Development Conference at Daytonian Hilton Downtown. Info: MSDC 91, 524 West 6th Street, Lakeside OH 43440.

4-6 October
CONTEXT IV (Ohio-area SF conference) at Hilton Inn North, Columbus, Ohio. Guest of Honor—Larry Niven. Registration—$23. Info: Fanaco, Inc., Box 2954, Columbus OH 43216. (614) 889-0436.

4-7 October
ROVACON 16 (Tidewater SF conference) at Arborgate Inn, Salem Civic Center, Salem, Va. Guest of Honor—Julius Schwartz, Artist Guest of Honor—Clay Ferguson, Special Guests—Forrest J. Ackerman and John Gardner. Registration—$15 until 15 September, $20 at the door. Info: RoVaCon, Box 117, Salem VA 24143. (703) 389-9400 (after 5 pm ET).

11-13 October
ICON XVI (Iowa SF conference) at Westfield Inn, Coralville, Ia. Guest of Honor—Steven Brust, Fan Guests of Honor—Bob and Nonie Quinlan. Info: ICon, Box 525, Iowa City IA 52244-0525.

18-20 October
NotJustAnother Con (U. Mass. SF conference) at the Campus Center Hotel, U. Mass., Amherst, Mass. Fan Guest of Honor—T.J. Glenn, Special Guest—Duane Elms. Registration—$15 until 1 October, $19 thereafter. Info: SCUM, RSO 16, SAO, UMASS, Amherst MA 01003. (413) 545-1924.

31 October-3 November
WORLD FANTASY CONVENTION at Doubletree Hotel at Randolph Park, Tucson, Ariz. Guests—Harlan Ellison, Susan Ellison, Stephen R. Donaldson, Arlin Robins. Registration—$80 until 15 October, $100 at the door (if any memberships left), $25 banquet. Info: 1991 World Fantasy Convention, Box 27201, Tempe AZ 85285.

3-7 September 1992
MAGICON (50th World Science Fiction Convention) at Orange County Civic & Convention Center, Orlando, Fla. Guest of Honor —Jack Vance; Artist Guest of Honor—Vincent Di Fate; Fan Guest of Honor—Walter A. Willis. Registration—$75 adult/$35 child until 31 March. *Supporting*—$20. This is the SF universe's annual get-together. Professionals and readers from all over the world will be in attendance. Talks, panels, films, fancy dress competition—the works. Join now and get to *nominate* and *vote* for the Hugo Awards and the John W. Campbell Award for Best New Writer. Info: MagiCon, Box 621992, Orlando FL 32862-1992. (407) 275-0027. UK agent Peter Weston, 72 Beeches Drive, Erdington, Birmingham B24 0DT UK.

—Anthony Lewis

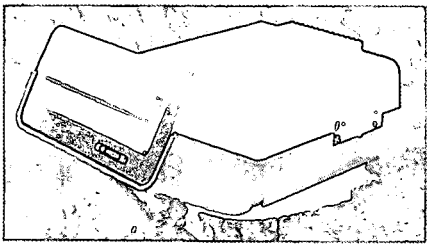
Items for the Calendar should be sent to the Editorial Offices six months in advance of the event.

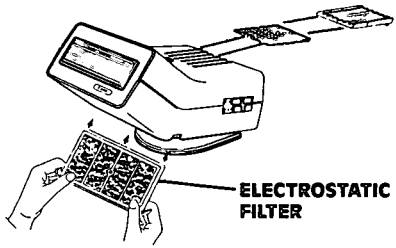
LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

MAIL ☆ ORDER ☆ MALL

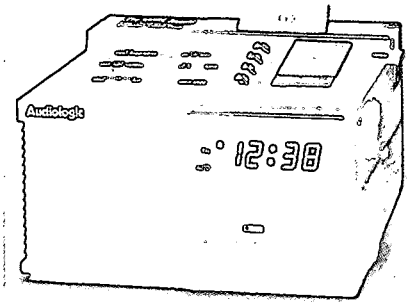
▽ BREATHE EASIER WITH THE AIR PROCESSOR

Clean air is vital to overall good health and general well-being and there is growing concern about the quality of the air around us. Amcor's Air Processor is uniquely designed to remove indoor air pollution and improve air quality. This compact unit has a high voltage generator that produces negatively charged ions that clean the air of cigarette/cigar smoke, dust, pollen, fungal and bacterial particles as well as a host of other allergy stimuli. The Air Processor also features a blower for air circulation and a unique filter that is permanent and washable. Includes a free Ionoscope that detects the negative ions emitted from the ion generator and proves that it is functioning. Very quiet so it is perfect for any room in your house. UL listed. **$99.98** ($6.50) #A2002.





▽ SLEEP SOUNDLY WITH SOUND SLEEPER



Is noise pollution interfering with your ability to get a good night's sleep? If so, then the Sound Sleeper by Audiologic is the clock radio of your dreams. Sound Sleeper combines a state of the art AM/FM cassette clock radio with the benefits of natural sound conditioning. Sound Sleeper lets you fall asleep to the sounds of ocean surf, rushing waterfalls and/or rainfall with the flip of a switch. After a relaxing night's sleep, wake up with a buzzer or music from the radio or cassette. So why have an ordinary clock radio when you can have the cassette clock radio that not only wakes you up but also lulls you to sleep! **$89.98** ($5.50) #A2000.

TO ORDER: Send check with item number for total amounts, plus shipping & handling shown in ( ) payable to **MAIL ORDER MALL** Dept. 101 AN, P.O. Box 3006, Lakewood, N.J. 08701, or call TOLL FREE **1-800-722-9999**. NJ residents add 7% sales tax. We honor MasterCard, Visa, and American Express. Sorry, no Canadian, foreign, or C.O.D. orders. Satisfaction Guaranteed. 30 day money back guarantee for exchange or refund. Allow 30 days for delivery.

Magalog Marketing Group Inc. © 1991
1905 Swarthmore Ave, Lakewood, N.J. 08701

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED

A masterful storyteller is back with the start of a mesmerizing new trilogy

DRAGON STAR: BOOK 1

STRONGHOLD

Melanie Rawn

With her best-selling DRAGON PRINCE trilogy Melanie Rawn opened an enchanted gateway to a spellbinding universe of Sunrunner's magic and sorcerous evil. Now, in STRONGHOLD, the first novel in her magnificent new DRAGON STAR trilogy, a generation of peace is about to be shattered as a seemingly unstoppable invasion force lays siege to High Prince Rohan's realm.

"Melanie Rawn does for fantasy what Frank Herbert did for science fiction in his classic novel *Dune*."
—Rave Reviews

$5.99
DAW Books, Inc.
Distributed by Penguin USA

Join High Prince Rohan in his desperate battle to save the dragons... order your classic T-shirt today!

SAVE THE DRAGONS T-Shirt
c/o TYME 250 Hudson Street, New York, NY 10014

Please send me _____ STRONGHOLD "Save the Dragons" T-Shirt(s) at $6.95 ($10.95 in Canada) plus $1.50 postage and handling per T-Shirt ordered. I enclose $_____
☐ check or ☐ money order (no CODs or cash). ☐ large ☐ extra large (check one).

Name_____

Address_____

City_____ State_____ Zip_____

Allow a minimum of 4 to 6 weeks for delivery. This offer is only available while limited supplies last, and is subject to withdrawal without notice. AA/10

LICENSED TO UNZ.ORG
ELECTRONIC REPRODUCTION PROHIBITED